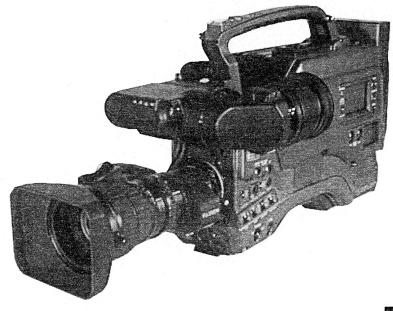
SERVICE MANUAL

DIGITAL S CAMCORDER

DY-90U/DY-90E/ DY-90EC/DY-90EC (K)



DIGITALS

The photo shows the DY-90U camcorder with an optional lens and viewfinder.

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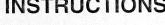
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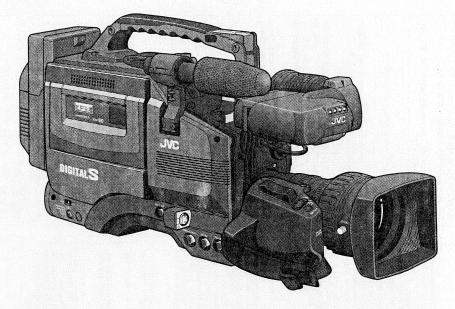
DIGITAL S CAMCORDER

DY-90

DIGITALS



INSTRUCTIONS



Illust shows the DY-90 camcorder with an optional lens, microphone, mic holder and viewfinder.

This instruction manual was revised in correspondence with service manual of DY-90. To maintain picture and sound quality, use the exclusive head cleaning cassette after every 20 hours of operation.

For details on head cleaning, refer to page 7.

SC96822 : U-ver. SC96823 : E-ver.

INTRODUCTION

CONTROLS, INDICATORS AND

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FEATURES OF THE **CAMERA SECTION**

PLAYBACK MODE

SAFETY PRECAUTIONS

FOR USA AND CANADA



TO REDUCE THE RISK OF ELECTRIC SHOCK, CAUTION:

DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magni-The lightning flash with arrowhead symbol, within an tude to constitute a risk of electric shock to persons

the literature accompanying the appliance.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in

INFORMATION FOR USA

generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference and communications. However, there is no guarantee that interference will not occur in a particular ristallation. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment e equipment has been tested and found to comply with the limits a Class B digital device, pursuant to Part 15 of the FCC Rules.

- Reorient or relocate the receiving antenna.
- increase the separation between the equipment and receiver.
 Connect the equipment into an outlet on a circuit different from
- Consult the dealer or an experienced radio/TV technician for help.

CHANGES OR MODIFICATIONS NOT APPROVED BY JVC COULD VOID USER'S AUTHORITY TO OPERATE THE **EQUIPMENT.** CAUTION

OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFEREE, MN (2) THIS DEVICE MAY STACCET ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

RENSEIGNEMENT (POUR CANADA) INFORMATION (FOR CANADA)

This Class B digital apparatus meets all requirements of the canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO

RAIN OR MOISTURE.

This unit should be used with 12V DC only.
CAUTION:
To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTE: The rating plate (serial number plate) is on the top frame.

CAUTION
To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

AVERTISSEMENT:
POUR EVITER LES RISQUES D'INCENDIE OU
D'ELECTROCUTION, NE PAS EXPOSER
L'APPAREIL A L'HUMIDITE OU A LA PLUIE.
Ce magnétoscope ne doit être utilisé que sur du courant

Afin d'eviter tout resque d'incendie ou d'électrocution, ne pas utiliser d'autres sources d'alimentation électrique.

REMARQUE

tification (numéro de série) se trouve sur le panneau

The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat avobe 100°C (212°P) or incinerate a Replace battery with Matsushita Electric CR2032, use of another battery may present a risk of fire or explosion. WARNING ON LITHIUM BATTERY

Dispose of used battery promptly.
 Keep away from children.
 Do not disassemble and do not dispose of in fire.

Explosionsfara vid felaktigt batteribyte. Arvånd samma batterityp eller en ekvivalent typ som rekommenderas av apparattiliverkaren. Kassera anvånt batteri enligt fabrikantens instruktion.

ADVARSEL For Norway

anbefalt som Lithiumbatteri-Eksplosjonsfare. Ved utskifting benyttes kun batteri

Brukt batteri returneres apparatieverandøren

For Denmark

Lithiumbatteri–Eksplosionsfare ved feilagtig handtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Lever det brugte batteri tilbage til leverandøren. ADVARSEL

For Finland

VARDUTUS.
Paristo voi räjähtää, jos se ön vinheellisesti asennettu.
Paristo voi räjähtää, jos se ön vinheellisesti asennettu.
Payhda paristo annostaan lallevalmistajan suoaittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

Precautions for 4 channel audio internal editing

Thank you for purchasing the DY-90 DIGITAL S CAMCORDER. (These instructions are for DY-90U)

Use a 4 channel audio compatible Digital S editing unit (BR-D92, etc.) when performing audio insertion editing of a 4 channel audio recorded tape.

patible (BR-D80, BR-D85 and BR-D750), the recorded audio signals on the DA3 and DA4 channels are When performing audio insertion editing with a Dig-ital S editing unit which is not 4 channel audio com-

This unit is a DIGITAL S format camcorder. Video cassette tapes which are not marked DIGITAL S cannot be used with this unit.

(J

MAIN FEATURES

- Compact, lightweight, low-power consumption design.
- High picture quality thanks to the DIGITAL S format.
 The 4:2:2 component digital processing of the format ensures recording and playback with high picture quality.
- High-quality digital audio with 16-bit, 48 kHz sampling is provided for 4 channels. High sound quality thanks to the 4-channel PCM audio.
 - Concentrated LCD display (with back light)
 The concentrated LCD panel shows the time code and CTL els, VCR's setup menus, hour meter data and a variety of warning indications. It is back-lighted to facilitate viewing under low count, tape remaining time, remaining battery power, audio levlight conditions.
- The built-in time code reader/generator can be used to record SMPTE; U-ver/EBU; E-ver time code and user's bits. Time code reader/generator
- tor which is connected to the time code input.

 The data in the built-in time code generator is output from the time code output terminal. Time code input/output connectors for slave lock capability
 This unit can be slave-locked to an external time code genera-
- phone, interview microphone and line input. Highly reliable balanced XLR connectors are provided for microphone and line input, for ensuring improved signal-to-noise ratio and enhanced Four lines of audio input are available including camera micro- 4-line audio input connectors sound quality.
- AEF (Automatic Edit Function) enables neat switching between
- Apart from the SMPTE; U-ver/EBU; E-ver time code area, another time code area is provided for the recording of data on the Date/time data recording date and time of the day.
- reproduced audio can be monitored in play mode. The loudspeaker also outputs an alarm tone in case an abnor-The input audio can be monitored in record or EE mode and the Built-in loudspeaker for audio checking mal condition occurs with the unit.
- Rec check function for quick recording review
- Enables searching of the end of the recorded section for the next recording when the recorded tape is loaded. Scene change cueing function

- LOLUX captures scenes never before possible because of low
- lighting conditions. In this mode the COC chip is maximized for low light sensitivity. This Super Sensitivity is ideal for special shooting conditions with almost no lighting. Good color balance is maintained even down to 0.75 killumination.
 - Multi-zone iris detection circuit ensures optimum iris position even in backlit conditions or when a bright subject moves in a frame. Over-under level switchable. Multi-Zone Auto Iris Detection Circuit
- In addition to center mark on/off capability, safety zone indication for the 16:9 screen format is available. Safety Zone indication
- Indicated area can be selected with 70 80%, 85 95%, OVER 95% or OVER 100%. Zebra pattern video level indication
- ing conditions which varies as you move between indoors and outdoors or between bright and dark locations. It is not necessary The FAS function provides a wide range of compatibility with shootto change the switch and filter positions every time you move Full Auto Shooting (FAS) function
- Color temperature conversion filters for "3200 K", "5600 K", "5600 K + 1/16 ND" and "3200 K + Efect (cross)".
- Colour temperature conversion filters for "3200 K", "5600 K", "5600 K + 1/4 ND" and "5600 K + 1/16 ND"
- Flicker bars in the display image of computer monitors are caused by the differing scan rate of the computer monitors. The Variable Scan function can minimize this effect by tuning the camera shut les speed to the precise scan rate of the display screen. The small increments range from 60.5 Hz to 1966.7 Hz (U-ver.) from 50.4 Hz to 1953.1 Hz (E-ver.). Variable scan.
- Data for the recording condition set with the menu switches on the carmer section can be registered on the set up box. The data registered on the set up box can be recalled and loaded on the main unit for a quick setup. Set up box provided

The following symptoms will appear when the tapes recorded on other units (including DY-90) are recorded or corded on other units (includ played back on this machine.

- The transient section between scenes recorded on other
- units may appear disturbed.Digital noise appears during playback because of tracking
- Not to record important materials contents for two or three
- minutes in the beginning of tape.

 We cannot assume the liabilities which may derive from the impossibilities of normal recording or playback in case of failure with this unit or the video cassette in use.

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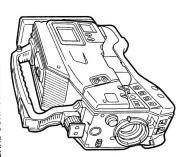
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1. INTRODUCTION

1-1 System Configuration

The standard configuration of the DY-90 is as shown below

STANDARD CONFIGURATION









may be interrupted.

Tripod base

Camcorder (DY-90)

1-2 Precautions for Proper Use

- Make sure that the power is between 11 V and 15 V DC. If the power voltage is too low, abnormal color and increased noise may occur. Do not exceed 15 V DC in any case, or the unit
- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture may contain noise and the colors may be incorcould be damaged
- When a wireless microphone or wireless microphone tuner is used near the camera, the tuner could pick up noise. In such a
 - Avoid using or placing the unit in places; case, select another channel.
 - subject to extreme heat or cold;
 - · with excessive dirt or dust;
- with high humidity or moisture;
- subject to smoke or vapor such as near a cooking stove;
 - subject to strong vibrations or on an unstable surface.
- also do not leave the unit for long hours in a parked car under direct sunlight or near room heating equipment.
- Protect the unit from being splashed with water (especially when shooting in the rain).
- Protect the unit against penetration of dust when using it in a place subject to sandy dust.
- Use the unit in an upright position. If placed on its side, heat release efficiency will deteriorate, adversely affecting the tape
- (Special care is required to avoid shocks during transportation.) Do not drop or hit it against a hard object

- Remove the video cassette before transporting the unit.
- Do not insert an object other than a video cassette in the cassette insertion slot. Be sure to close the cassette cover when the unit is not to be used for a long period
- To avoid condensation inside the unit, do not transport it between places with a large difference in temperature.
- Do not set the POWER switch to OFF or remove the power cable during recording or playback. Otherwise the tape may be damaged.
- When the unit is not in use, be sure to set the POWER switch to OFF in order to save power consumption
 - Cleaning the body: Wipe body with a dry, soft cloth (such as cheesecloth). When it is extremely dirty, soak the cloth in a solution of neutral detergent, wring it out and then wipe.
- ner to touch the body, and do not wipe it with a cloth soaked in To prevent deformation of the body, etc. and to avoid operation hazards, do not allow volatile liquids such as benzine and thinsuch a liquid.
 - If the equipment is soiled with water, oil, solvent, etc., wipe over with soft cloth or cotton first, then clean with gauze, etc. soaked in denatured alcohol.

The camera may be unstable in the period immediately after

tape, as this may cause noise to the audio and video signals even when the unit enters the stop mode. If this happens, remove the cassette tape so that the unit returns to its normal Do not playback an PAL for U-ver, NTSC for E-ver recorded the power is turned on, but this is not a malfunction.

The MONITOR OUTPUT connector of this unit outputs the video signal with setup at the factory. When the video signal without setup is requested, consult your nearest JVC authorized → Setup level (U-ver. only)

Only the video signal without setup is recorded on the tape.

1. INTRODUCTION

Routine and Periodical

maintenance (inspection) to prevent troubles which may be caused by the sudden occurrence of failure. As the replacement, adjustment and servicing of parts require advanced skill and equipment, please consult the person in charge of them. Also, dust which penetrates the inside of the VCR section especially during outdoor use will promote the wear and deterioration To prevent wear and deterioration, clean the mechanical parts using a head cleaning tape as routine maintenance. But cleaning with a head cleaning tape alone is not enough for cleaning the entire tape transport mechanism. it is also recommended to apply periodical hand, when the unit has been used for a long period, the heads, drums and tape transport mechanisms also collect dirt deposited on This unit incorporates precision mechanical parts, which will collect dirt, wear out and deteriorate as the unit is used. On the other of mechanical parts by causing poor contact between tape and heads or failing to maintain the video and audio quality at high levels.

Periodical Maintenance professional video equipment at your nearest JVC-authorized service agent.

Contents : Check or replace the following mechanical parts ac-

cording to the running time.

To maintain high video and audio quality, clean the heads by using the special head cleaning tape about every 20 hours.

Head Cleaning

1500H 1000 H Running Time Drum ass'y (including heads) Head cleaner Fixed heads Belts & pinch rollers Drive parts Tape guides & rollers If head cleaning is not performed periodically, a type of mosaic noise called block noise may appear in the picture or sound

- heads) and the head cleaner should &: Clean and check. Replace as required. The drum assembly (including O: Clean, check and adjust. be replaced every 500 hours.
- The maintenance contents may be variable depending on the operating environment and method. Therefore, the above data should be considered as a reference.

The running time of the VCR section can be confirmed with the hour meter display (which shows the drum running time). For details, see "HOUR METER DISPLAY" on page 87. Time management

For consultations related to the maintenance programming or cost, please contact the person in charge of professional video equipment at your nearest JVC-authorized service agent.

operation in record-pause mode. At this time, the warning

message "VTR WARNING (HEAD)" is displayed on the view

finder. During recording, this indicator does not light up and the

warning message on the viewfinder is not displayed.

the RF indicator lights up on the display during the back-space

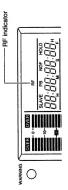
When dust is deposited on the video head of the VCR section.

dure and precautions.

Do not use head cleaning tapes other than specified. Read the instructions of the head cleaning tape for its operating proce-

Use the optional DCL-5 as the head cleaning tape.

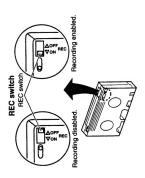
Block Noise



→ See page 2-4 "MAINTENANCE AND INSPECTION OF MAIN PARTS".

1-4 Video Cassette to be Used

- Only cassette bearing the "manalS" logo can be used with
- Video cassettes marked with S-VHS or VHS cannot be used with this unit. If you insert an S-VHS or a VHS cassette in the VCR, it will be ejected automatically
 - Video cassettes cannot be used upside down.
- Avoid storing a video cassette with unevenly wound tape, as this may damage the tape. Rewind it to the beginning before placing a cassette into storage.
 - comes unable to maintain full performance due to an increase in noise caused by dropouts, etc. Do not continue to use a After a video cassette tape has been used repeatedly, it bedirty or damaged tape, as this will reduce the rotary head life.
- The video cassette tape marked may S is provided with a REC
- switch for use in preventing accidental erasure.
 Slide the REC switch to OFF to protect the required recording in the tape from being overwritten.
 - To record on the tape, slide the REC switch to ON



1-5 Battery Pack to be Used

This unit can use any of the following battery packs.

• JVC battery pack: NB-G1U

• Flat Shape Type bettery pack

- Anton-Bauer battery pack: Trimpack 13/14 Series, Magnum 13/14 Series,

Compack 13/14 Series. Propack 13/14 Series.

See page 37 for battery holder attaching method.

Battery holder: Anton-Bauer model QRQ27.

An additional battery holder is required.

directly.

To display the remaining battery power accurately, set "BATT.

TYPE SELECT" in setup menu Group 4 according to the type of the battery pack in use. (See page 64)

1-6 Condensation

- - Condensation occurs in the following cases:
 - · When the unit is suddenly moved from a cold place to a warm place.
- rectly to cold air from the air condied or when the unit is exposed di-

- When condensation occurs with this unit, the DEW on the display lights up, the error code "Err 02:1" appears on the counter display (see page 85).
- the viewfinder screen. To assist this, leave the unit with the power ON and wait until the error code "Err 02:1" and the DEW indicator disappear from the display. A warning message "VTR WARNING (DEW)" is displayed on

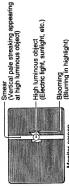


1. INTRODUCTION

1-7 Camera and Lens

CAMERA

- to induce vertical streaking or smear when shooting an extremely
- Another effect is the expansion of light around a bright light or



Blooming (Blurring in highlight)

Gain, Noise

 Higher levels of output gain result in a decrease in the signal to noise ratio, possibly resulting in a noisy picture.

Moire or Aliasing

An Anton-Bauer battery pack cannot be attached to this unit

 Shooting stripes or fine patterns may cause a jagged effect or a banding in fine mesh patterns.

Try repositioning the lens zoom to change the frequency of the detail information and eliminate the distortions.

High Temperatures

 High temperatures can cause CCD sensor pixels to maifunction with the effect of white dots in the image. This condition could damage the CCD, and certainly raises the "fixed pattern". noise level which CCDs have, thus giving a noisy picture.

CCD Smear and Blooming

- Due to the physical structure of the CCD in this unit it is possible bright light source.
- object called Blooming.

 Just as you protect your image against lens flare (internal lens reflections); please be careful when shooting a bright light

High luminous object (Electric light, sunlight, etc.) Monitor screen

- UV filter against accidental scratching, touching or dirt. The ex- The camera lens should be protected externally with a Clear or ternal lens cap should be used whenever possible.
- When the lens is changed, take special care to avoid contaminating the inner lens surface and camera gate/optical block area Do not expose the lens or viewfinder to strong sunlight or place with moisture or dust.
 - Exposure of the lens or viewfinder to strong sunlight or other in a strong light source.
- Continued exposure of the lens or viewfinder to sunlight will damage the internal condensing lens, resulting in malfunction strong light sources will cause eye injuries. and possible fire.

 When the unit which has been cooled down completely in a cold place is carried to a warm place, the moisture contained in the warm air may attach to the head drum or tape guides and be cooled into water droplets. This phenomenon is referred to as condensation (dewing). When this occurs in a DY-90, the head drum and tape guides are covered with droplets allowing the tape to be stuck to them, leading to tape damage.

When the room heater has just start-

When the unit is placed in a very

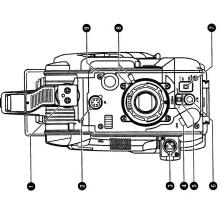
Video tape

AUTO OFF indicator

- Error display "Err 02:1"

2. CONTROLS, INDICATORS AND CONNECTORS

2-1 Front Section (U ver.)



Mount the VF-P116 or VF P115 viewfinder (optional) on the Viewfinder mount base, sliding securing ring

base and secure it using the sliding securing ring. See "Attaching the Viewfinder" on page 31.

[VF] Vlewfinder connector

Connect to the cable from viewfinder.

This balanced XLR three connector is for microphone level only. A 48 V DC is supplied as the power supply for the microphone (Use only phantom microphone). Connect the JVC MV-P615 [DA2 IN (MIC IN + 48 V)] DA2 (Microphone) input connector or other microphone.

The audio signal from this connector is recorded on DA2 of the PCM audio channel. It is also recorded on the linear track of the tape for audio search.

When using a microphone other than a Phantom microphone, consult a JVC authorized service agent.

Function SOLD GOLD

	Pin N	-	2	c
,				
	(0	(3

See "Attaching the Optional Microphone" on page 33.

[LENS] Lens control connector

Connect 12-pin lens control cable from lens. Lens connector function

EXTENDER position IRIS A/R INPUT ZOOM position IRIS position Function Pin No. 10 ens AUTO/MANU contro VCR trigger IRIS control Function RET switch gNB Pin No.

→ See page 3-6 "3.2.8 Service menu". U-10

+12V DC

(a) [ZEBRA] Switch

brightness corresponding to 70% to 80% video levels on the viewfinder screen. This pattern can be used as a reference for When this switch is ON, a zebra pattern is displayed with a

When adjusting the iris manually, adjust it so that the zebra patterns are displayed in the section which you want to stress manual adjustment of the lens iris. in the object.

 The default value is 70% - 80%. The luminance level can be changed with the ZEBRA setting in the Advanced Menu

See "ZEBRA item" on page 70.

[O [VTR] VTR trigger button (record start/stop button) With the VCR set in record pause mode, record start/stop can

(It is interlocked with the lens and the VTR trigger button on be effected with this button. the side panel.)

D [AUTO WHT./ACCU FOCUS] switch

AUTO WHITE

First position a white object to occupy 80% of the center of the

Setting this switch to the upper position ("AUTO WHT.") will provide automatic adjustment for white balance. It is not activated in preset, full auto shooting, full-time auto

See "White Balance Adjustment" on page 44. white blance and color bar modes.

the lens iris will be forced to open for approximately ten When this switch is set to "ACCU FOCUS" in the lower position, ACCU-FOCUS:

The object depth can be reduced and the lens focusing can be adjusted more accurately.

CAUTION:

on the screen depending on the lighting conditions (such as a fluorescent lamp, etc.) As the automatic shutter is activated here, flicker may appear

Operation is not possible in the LoLux mode

Hold the lens and use the knob to twist the ring anticlockwise Lens mounting ring/Lens lock lever

To mount lens make sure the lens guide pin fits well, and then twist the ring clockwise until firm. See "Attaching the Zoom Lens (Optional)" on page 31 to release lens.

[FILTER] Color temperature conversion filter con-

This knob changes the internal filter of color temperature. See "Filter" on page 41.

(Sizebra) Switch

2-1 Front Section (E-ver.)

2. CONTROLS, INDICATORS AND CONNECTORS

When this switch is ON, a zebra pattern is displayed with a brightness corresponding to 70% to 80% video levels on the viewfinder screen. This pattern can be used as a reference for

patterns are displayed in the section which you want to stress When adjusting the iris manually, adjust it so that the zebra manual adjustment of the lens iris. in the object.

8,8

 The default value is 70% - 80%. The luminance level can be changed with the ZEBRA setting in the Advanced Menu

See "ZEBRA item" on page 70.

⑤ [VTR] VTR trigger button (record start/stop button) With the VCR set in record pause mode, record start/stop can be effected with this button.

(It is interlocked with the lens and the VTR trigger button on the side panel.)

P [AUTO WHT./ACCU FOCUS] switch

AUTO WHITE:

0

۵ 90

It is not activated in preset, full auto shooting, full-time auto First position a white object to occupy 80% of the center of the Setting this switch to the upper position ("AUTO WHT.") will provide automatic adjustment for white balance.

Mount the VF-P116 or VF P115 viewfinder (optional) on the

base and secure it using the sliding securing ring.

See "Attaching the Viewfinder" on page 31.

Viewfinder mount base, sliding securing ring

See "White Balance Adjustment" on page 43. white blance and colour bar modes. ACCU-FOCUS:

the lens iris will be forced to open for approximately ten When this switch is set to "ACCU FOCUS" in the lower position, seconds The object depth can be reduced and the lens focusing can be adjusted more accurately.

CAUTION:

This balanced XLR three connector is for microphone level A 48 V DC is supplied as the power supply for the microphone (Use only phantom microphone). Connect the JVC MV-P615

(MIC 2 IN + 48 V) Microphone 2 input connector

Connect to the cable from viewfinder.

[VF] Viewfinder connector

As the automatic shutter is activated here, flicker may appear on the screen depending on the lighting conditions (such Operation is not possible in the LoLux mode. as a fluorescent lamp, etc.

Continuation Problems In the second of th

When using a microphone with this connector, refer to 6 [MIC1/MIC2] SELECT switch on page 15 and set the switch to

or other microphone.

Hold the lens and use the knob to twist the ring anticlockwise to release lens.

Function

Pin No.

(0)

GND HOT COLD

See "Attaching the Optional Microphone" on page 33.

Connect 12-pin lens control cable from lens.

Lens connector function

Pin No.

[LENS] Lens control connector

To mount lens make sure the lens guide pin fits well, and then twist the ring clockwise until firm. See "Attaching the Zoom Lens (Optional)" on page 31

[FILTER] Colour temperature conversion filter control knob

This knob changes the internal filter of colour temperature. See "Filter" on page 40.

=	
	- 1

E-10

EXTENDER position

ZOOM position

0 1

Lens AUTO/MANU contro

IRIS A/R INPUT

IRIS position

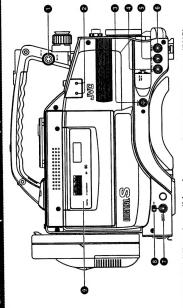
RET switch VCR trigger Function

Function

Pin No.

2. CONTROLS, INDICATORS AND CONNECTORS

2-2 Left Side Section (Cassette Side) (U-ver.)



D [DA4 IN (MIC 1 IN)] DA4 (Microphone 1) input

connector (6-pin)

Connect the provided microphone. With the mic holder (optional), the following microphone models

- MV-P616 (mono) can be used.
- MV-P612 (stereo/mono)
- The audio signal from this connector is recorded on DA4 of the PCM audio channel
- · It is not recorded on the linear track of the tape for audio
- When using a stereo microphone, the audio signal is only recorded on the L channel

Pin No.	Function	Pin No.	Function
4	ı	۵	L (Hot)
8	9 V DC	ш	L (GND)
-	0.10	L	

Mic holder mounting screw holes

The mic holder KA-A90 (Optional) can be mounted here.

SET UP] connector

Connect the provided set up box to this connector.

The camera's menu data set with the **@** FILE switch A, B or OFF on page 14 can be read out onto the set up box.

Also the camera's menu data stored in the set up box can be recalled and written onto the FILE switch A, B or OFF.

IGEN LOCK IN] connector (BNC)

For readout from and writing on the set up box, see page 78.

External reference composite video or black burst video input. This unit cannot be genlocked with the VCR playback signal. See "Connection with a switcher" on page 80.

When the power is switched ON while external sync signal is input, the screen moves in a vertical direction for a few seconds. This is not a malfunction.

[TC IN] connector (BNC)

Input connector for the SMPTE-standard LTC signal. The built-in time code generator can be slave-locked with the input time For the slave lock of time code, see page 58.

[3] [TC OUT] connector (BNC)

Output connector for the LTC signal from the built-in time code generator. The time code recorded on the tape is not output in play mode.

[MONITOR OUTPUT] connector (BNC)

- Outputs the video signal selected by the @ [CAM/VTR] Composite video signal output connector.
- The signal with setup will be output.
- · Setup menu items for camera section, VCR section, time code or date/time data are not output.

CAM/VTR] Monitor output CAM/VTR switch

OUTPUT connector or viewfinder. CAM: Regardless of which mode, the EE image from the This selects the video signal to output to the MONITOR

camera video signal is output.

VTR: Playback image is output during the playback mode.

An EE image is output during other modes than the

*The backspace function during the Record-Pause Mode and the recording check function are also Play Mode.

carried out on the playback mode.

Regardless of the switch setting, playback sound is output during the playback mode and EE sound is output during other modes.

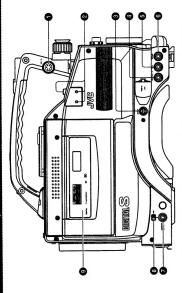
Cassette cover

button on the top of the VCR section opens this cover so that a cassette tape can be inserted or removed from the unit. The cover can be locked automatically by pushing and closing it. When the DY-90 is in POWER ON mode, pressing the EJECT

To prevent penetration of foreign objects in the unit, do not leave the unit with the cassette cover open.

2. CONTROLS, INDICATORS AND CONNECTORS

2-2 Left Side Section (Cassette Side) (E-ver.)



[MIC 1 IN] Microphone 1 input connector (6-pin)

Connect the provided microphone. With the mic holder (optional), the following microphone models

- can be used.
- MV-P616 (mono)
 MV-P612 (stereo)
- When using a microphone with this connector, refer to @[MIC1/MIC2] SELECT switch and set the switch to MIC1.
- See page 15.

 Set the [FRONT MIC1 SELECT] on the SETUP MENU according to the microphone type (monaural or stereo) to be

	Function	L (Hot)	L (GND)
	Pin No.	D	ш
connected, see page 64.	Function	R (Hot)	9 V DC
connect	Pin No.	4	8

To find out to which channel of the tape the audio signal from MIC1 or MIC2 connectors is recorded, see page 64.

R (GND)

GND

Mic holder mounting screw holes

The mic holder KA-A90 (Optional) can be mounted here.

SET UP] connector

page 14 can be read out onto the set up box.
Also the camera's menu data stored in the set up box can be recalled and written onto the FILE switch A or B. Connect the provided set up box to this connector. The camera's menu data set with the Ø FILE switch A or B on

For readout from and writing on the set up box, see page 78. [GEN LOCK IN] connector (BNC)

External reference composite video or black burst video input. This unit cannot be genlocked with the VCR playback signal. See "Connection with a switcher" on page 80.

When the power is switched ON while external sync signal is input, the screen moves in a vertical direction for a few

(BITC IN) connector (BNC)

seconds. This is not a malfunction.

Input connector for the EBU-standard LTC signal. The built-in time code generator can be slave-locked with the input time

For the slave lock of time code, see page 58.

(BITC OUT) connector (BNC)

Output connector for the LTC signal from the built-in time code

generator. The time code recorded on the tape is not output in play mode. [MONITOR OUTPUT] connector (BNC)

- Outputs the video signal selected by the

 [CAM/VTR] Composite video signal output connector
- Setup menu items for camera section, VCR section, time code or date/time data are not output.

Make sure that the monitor is terminated with 75 Ω before connecting the MONITOR OUTPUT connector. If it is not terminated with 75 \Omega the video signal will not output when the power is on because of the power saving features equipped with this unit.

⑤ [CAM/VTR] Monitor output CAM/VTR switch

This selects the video signal to output to the MONITOR OUTPUT connector or viewfinder.

CAM: Regardless of which mode, the EE image from the

camera video signal is output.

VTR: Playback image is output during the playback mode

An EE image is output during other modes than the Play Mode

*The backspace function during the Record-Pause Mode and the recording check function are also carried out on the playback mode.

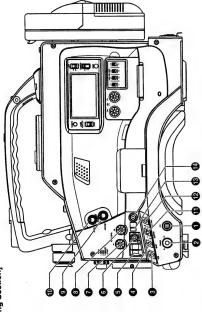
Regardless of the switch setting, playback sound is output during the playback mode and EE sound is output during other modes.

Cassette cover

button on the top of the VCR section opens this cover so that a cassette tape can be inserted or removed from the unit. The When the DY-90 is in POWER ON mode, pressing the EJECT cover can be locked automatically by pushing and closing it.

To prevent penetration of foreign objects in the unit, do not leave the unit with the cassette cover open.

Camera Setting Section]



With the VCR set in record pause mode, record start/stop can [VTR] VTR trigger button (Recording Start/Stop)

(It is interlocked with the lens and the VTR trigger button on be effected with this button. the front sections.)

[POWER] switch

Turn the power ON and OFF with this switch.

With this switch set to ON, the DY-90 status differs depending on the setting of the (VTR (SAVE/STBY) switch.

(VTR) switch

Select the DY-90 status when the power is turned ON with this switch.

protection mode. When a recordable cassette tape is loaded, pressing the [VTR] button enters the record : Drum rotation stops and the DY-90 enters the tape mode. However in this case, recording will start after a short interval.

button is pressed, the DY-90 immediately enters the 90 enters the record-pause mode and the drum continues to rotate. In this mode, when the [VTR] : When a recordable cassette tape is loaded, the DYrecord mode. STBY

 The mode selected by this switch is displayed on the status screen in the viewfinder.

G[GAIN] switch

Electronically boosts the light sensitivity when there is insufficient illumination on the subject. The boosting level differs depending on the switch position as follows:

H: 18 dB (boosted to approximately 8 times the original)

M: 9 dB (boosted to approximately 3 times the original)
 L: 0 dB (no boosting is applied)

with the advanced menu screen. (See page 69.)
The more the boosting level is increased, the more the resulting image will be noisy. The boosting level for each switch position can be changed

(AUTO IRIS) Auto iris level switch

This switch selects the automatic iris adjustment reference value according to the condition in which the camera is used. BACK. L : Under back light (Open the iris about 1 step from the standard level.)

NORMAL: Normal condition

SPOT. L : Under spotlight (Close the iris about 1 step from the standard level.)

See page 77.

[FULL AUTO] Full auto shooting ON/OFF button and indicator

This momentary switch turns this function on and off, with a

 Full auto shooting combines the auto iris, auto level control and full auto white (FAW) to automatically adjust the video signal level and the white balance to their optimum levels. indicator light

 The iris is placed in automatic even if the iris mode switch of The gain will vary continuously to the maximum of +18 dB. the lens is in manual.

The shutter speed will vary continuously to the minimum of See [Full Auto Shooting (FAS) function] on page 77. 1/200 of a second.

2. CONTROLS, INDICATORS AND CONNECTORS

2-3 Right Side Section (Cont'd) (U-ver.)

D [DA1 AUDIO LEVEL] Control

Adjusts the audio recording level of the [DA1 IN] connector on This adjustment is available only when the @ [DA1 AUDIO the rear panel.

MODE SELECT] switch on page 15 is set to MANUAL.

(DA2 AUDIO LEVEL) Control

Adjusts the audio recording level of the ([DA2 IN (MIC IN)] connector on the front panel

This adjustment is available only when the [DA2 AUDIO MODE SELECT] switch on page 15 is set to MANUAL.

MONITOR] Audio monitor control

Adjusts the volume of the monitoring loudspeaker and earphone. The audio is muted when this control is set to the minimum position.

D [ALARM] control

from the monitoring loudspeaker or earphone in case of a warning or other abnormal condition occurring with the DY-Turn to control the volume of the alarm tone which is output

Setting this control to the minimum position mutes the alarm Turn this control anticlockwise to reduce the volume.

f f OUTPUT Color bar/Camera/Auto knee switch

This switch is used to select the output signal. When the video signal from the shooting camera is selected, the auto knee function is available.

BARS: Outputs the color bar signal. In this mode, the auto knee function is not available. Set to this position when adjusting the video monitor or when recording the

CAM. AUTO KNEE OFF

In this mode, the auto knee function is not available. Outputs the video signal from the shooting camera CAM. AUTO KNEE ON

Outputs the video signal from the shooting camera. In this mode, the auto knee function is available.

When shooting a foreground object with a high-brightness background, if the brightness level is set for a foreground human being, etc., the background image will be blurred with white. In such a case, when the auto knee function is used, a **AUTO KNEE function**

It is effective especially in the following cases: clearer background is obtained

 When shooting a human being in the shade on a fine day When shooting a high-contrast scene

Note:

light is shot, the auto knee function may change the bright-ness of the entire image along with the motion of the ob-ject. In this case, set the auto knee function to OFF. If a fast moving high-brightness section like a car in sun-

(WHT.BAL) White balance switch

: If white balance is performed with the switch in There are three white balance modes possible with this switch. this position it will be memorised into A.

: If white balance is performed with the switch in (PRESET) An emergency setting for outdoors with a 5600K : A non-erasable white balance setting to 3200K. this position it will be memorised into B. œ

 FAW (Full-time Auto White) mode can be set to A, B or PRE. SET with the ADVANCED MENU (see page 69). In the FAW mode, video color temperatures are or 5600K+ND filter turret setting.

sampled for automatic adjustment to a proper white balance.

(B [BLACK] Black stretch/black compression switch Switches the gain for the dark section of the image.

Set to an appropriate position depending on the video signal

contrast in the dark portion of the image is enhanced. By stretching the signal only for the dark BLACK STRETCH:

When an entire image is relatively light and the contrast is low, the gain of the dark section is Standard mode. BLACK COMPRESS NORMAL

[LOLUX] LOLUX on/off button

compressed to increase the contrast.

· LOLUX gain gives extremely low light level sensitivity for special applications. This will result in an increase of 33 dB This button toggles the LOLUX mode on and off. in the LOLUX mode.

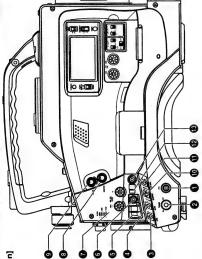
If the unit is placed in the LOLUX mode when it is in full auto shooting mode, the auto level control (ALC) (one of the full auto shooting functions) will be made inactive, so that the LOLUX operation takes priority over normal gain operation. LOLUX mode is given preference (FAW still remains active).

E-13

2. CONTROLS, INDICATORS AND CONNECTORS

2-3 Right Side Section (E-ver.)

[Camera Setting Section]



(NTR) VTR trigger button (Recording Start/Stop)

With the VCR set in record pause mode, record start/stop can (it is interlocked with the lens and the VTR trigger button on be effected with this button. the front sections.)

POWER] switch

Turn the power ON and OFF with this switch.

With this switch set to ON, the DY-90 status differs depending on the setting of the ® VTR (SAVE/STBY) switch.

@ [VTR] switch

Select the DY-90 status when the power is turned ON with this

protection mode. When a recordable cassette tape is loaded, pressing the [VTR] button enters the record SAVE: Drum rotation stops and the DY-90 enters the tape mode. However in this case, recording will start after

90 enters the record-pause mode and the drum continues to rotate. In this mode, when the [VTR] button is pressed, the DY-90 immediately enters the : When a recordable cassette tape is loaded, the DYa short interval. record mode. STBY:

 The mode selected by this switch is displayed on the status screen in the viewfinder.

[GAIN] switch

Electronically boosts the light sensitivity when there is insufficient illumination on the subject. The boosting level differs H: 18 dB (boosted to approximately 8 times the original) depending on the switch position as follows:

M: 9 dB (boosted to approximately 3 times the original) L : 0 dB (no boosting is applied)

· The boosting level for each switch position can be changed

The more the boosting level is increased, the more the with the advanced menu screen. (See page 69. resulting image will be noisy.

(B) [AUTO IRIS] Auto iris level switch

This switch selects the automatic iris adjustment reference BACK. L : Under back light (Open the iris about 1 step from value according to the condition in which the camera is used. the standard level.)

NORMAL: Normal condition

SPOT. L : Under spotlight (Close the iris about 1 step from the standard level.)

See page 77.

[FULL AUTO] Full auto shooting ON/OFF button and

· This momentary switch turns this function on and off, with a ndicator

and full auto white (FAW) to automatically adjust the video Full auto shooting combines the auto iris, auto level control signal level and the white balance to their optimum levels. indicator light.

The iris is placed in automatic even if the iris mode switch of the lens is in manual.

The shutter speed will vary continuously to the minimum of The gain will vary continuously to the maximum of +18 dB. See [Full Auto Shooting (FAS) function] on page 77. 1/200 of a second.

2. CONTROLS, INDICATORS AND CONNECTORS

2-3 Right Side Section (Cont'd) (E-ver.)

(NIC REC LEVEL) control

Adjust the recording level of the camera's microphone (MIC1 and MIC2) with this control. This control is valid only when the [MIC SELECT] switch is set

to "MANUAL".

Adjusts the recording level of the microphones: Microphone of MIC 2 connector. (Mono) 2/1L control

 Stereo microphone L channel of MIC 1 connector. Monaural microphone of MIC 1 connector

1R control

Adjusts the recording level of stereo microphone R channel of MIC1.

Adjusts the volume of the monitoring loudspeaker and ear-phone. The audio is muted when this control is set to the min-(IMONITOR) Audio monitor control mum position.

[ALARM] control

Turn to control the volume of the alarm tone which is output from the monitoring loudspeaker or earphone in case of a warning or other abnormal condition occurring with the DY-90. Setting this control to the minimum position mutes the alarm Turn this control anticlockwise to reduce the volume.

(OUTPUT] Colour bar/Camera/Auto knee switch

This switch is used to select the output signal. When the video signal from the shooting camera is selected, the auto knee function is available.

knee function is not available. Set to this position when adjusting the video monitor or when recording the BARS: Outputs the colour bar signal. In this mode, the auto

colour bar signal. CAM. AUTO KNEE OFF

Outputs the video signal from the shooting camera. In this mode, the auto knee function is not available. CAM. AUTO KNEE ON :

Outputs the video signal from the shooting camera. In this mode, the auto knee function is available. When shooting a foreground object with a high-brightness background, if the brightness level is set for a foreground human **AUTO KNEE function**

background is obtained.

being, etc., the background image will be blurred with white. In such a case, when the auto knee function is used, a clearer

It is effective especially in the following cases:

When shooting a human being in the shade on a fine day · When shooting a high-contrast scene

of the entire image along with the motion of the object. In is shot, the auto knee function may change the brightness If a fast moving high-brightness section like a car in sunlight this case, set the auto knee function to OFF.

(IWHT.BAL) White balance switch

: If white balance is performed with the switch in There are three white balance modes possible with this switch this position it will be memorised into A.

: If white balance is performed with the switch in this position it will be memorised into B.

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(PRESET) An emergency setting for outdoors with a 5600K : A non-erasable white balance setting to 3200K or 5600K+ND filter turret setting. PRST

 FAW (Full-time Auto White) mode can be set to A, B or PRE-In the FAW mode, video colour temperatures are constantly sampled for automatic adjustment to a proper white balance. SET with the ADVANCED MENU (see page 69).

@ [BLACK] Black stretch/black compression switch

Set to an appropriate position depending on the video signal Switches the gain for the dark section of the image. BLACK STRETCH: to be shot.

By stretching the signal only for the dark section, contrast in the dark portion of the image is enhanced.

Standard mode. NORMAL

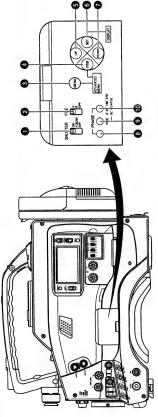
When an entire image is relatively light and the contrast is low, the gain of the dark section is compressed to increase the contrast. BLACK COMPRESS

(LOLUX) LOLUX on/off button

This button toggles the LOLUX mode on and off.

 LOLUX gain gives extremely low light level sensitivity for special applications. This will result in an increase of 33 dB in the LOLUX mode.

If the unit is placed in the LOLUX mode when it is in full auto shooting mode, the auto level control (ALC) (one of the full auto shooting functions) will be made inactive, so that the LOLUX mode is given preference (FAW still remains active). LOLUX operation takes priority over normal gain operation.



(SHUTTER) Shutter switch

š

: This mode allows setting of different shutter

To change shutter speed push the UP 6 or DOWN buttons.

V.SCAN: This mode helps adjust the shutter speed to match Place the switch down in the V.SCAN position and the scan rate of computer monitor.

then use the UP or DOWN buttons to adjust the

: This mode corresponds to the standard 1/60. OFF

 The shutter speed is displayed in the viewfinder (See page 29.)

WHEN TO USE

A shutter speed of 1/50th second is too slow to prevent blurring

This gives a smooth and natural effect when watching motion normally, but in certain applications the video is to be displayed in slow motion or as a freeze. The blurring in this case reduces from normal actions when a subject is moving.

As one increases the shutter speed the amount of light collected is less and less, so consideration should be given to the possible sharpness of the image.

the effects of openning the iris and increasing gain. Opening the iris reduces depth of field and causes foreground and background objects to go out of focus. This is a useful artistic technique.

[FILE] File switch

This switch registers the set values at the MENU screen for camera section and reads the registered FILE.

- Shooting can be carried out with the set values Register to the FILE A. (in registration)
 - Shooting can be carried out with the set values registered to the FILE A. (in reading) : Register to the FILE B. (in registration) registered to the FILE B. (in reading)
- Shooting can be carried out with the set values : Register to the FILE OFF. (in registration) H

registered to the FILE OFF. (in reading)
The items in the ADVANCED MENU require the registration operation. (Switch position: During A or B) See page 68.

(MENU] button

[ITEM] button

() [UP] button

@ [SET/DISPLAY] button

When this button is pressed in the normal mode screen, the viewfinder display mode is changed. Each time this button is pressed, the viewfinder display is changed in the order Status 0, Status 1, Status 2 and then returned to Status 0.

For details on "Status Screen", see page 25.

[DOWN] button

The above buttons (8) to (7) are used when setting the Setup Menu items for the camera section.

The menu screen is displayed in the viewfinder. See page 65.

Jse this control to adjust the H sync phase while the genlock [PHASE H] Horizontal phase control

signal is input.

Use this control to fine-adjust the SC phase while the genlock [PHASE SC FINE] Color sub-carrier phase control signal is input.

@ [PHASE SC COARSE] Color sub-carrier phase

coarse adjustment control

genlock signal is input.

The SC phase will toggle between 0°, 90°, 180° and 270°.

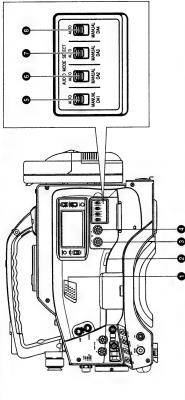
The SC phase will toggle between 0°, 90°, 180° and 270°.

Be "Connection with a switcher" on page 80 for **©** through **©**. Use this control to coarse-adjust the SC phase while the

2. CONTROLS, INDICATORS AND CONNECTORS

Right Side Section (Cont'd) (U-ver.) 2-3

Audio Setting Section]



Monitoring loudspeaker

- Enables EE monitoring of the input audio signal during recording, in the record-pause mode or in the stop mode.
- The PCM audio channels to be output can be selected using Outputs the playback sound in the playback mode
 - the AUDIO MONITOR switch on page 16.
- The loudspeaker volume can be adjusted with the AUDIO MONITOR control.

The audio from the loudspeaker is defeated when an earphone is plugged into the EARPHONE jack. The warning alarm tones are also output through this loudspeaker. For details, see pages 81 and 82.

Lithium Battery Installation Case

Installs a lithium battery in this case. The battery is used for the backup of the time code and the date/time data. The DY-90 is delivered without the battery installed. Install the lithium battery provided (CR2032). See page 34 for information about

how to install it.

Adjusts the audio recording level of the [DA3 IN] connector on ® [DA3 AUDIO LEVEL] control

The volume can be controlled when @ [DA3 AUDIO MODE

DA4 AUDIO LEVEL] control

SELECT] switch is set to MANUAL

Adjusts the audio recording level of the [DA4 (MIC1 IN)] connector on the left side section.

The volume can be controlled when

[DA4 AUDIO MODE SELECT] switch is set to MANUAL

(DA1 AUDIO MODE SELECT) switch

Selects the audio recording level adjusting method for the [DA1 IN] connector on the rear panel.

: The audio recording level is held at the reference level even when sounds greater than the refer-

The recording level does not increase when the ence input level are input. input level is low.

The recording level can be adjusted with 7 DA1 AUDIO LEVEL control on page 13. MANUAL

⑤ [DA2 AUDIO MODE SELECT] switch

Selects the audio recording level adjusting method for the [DA2 The audio recording level is held at the reference IN (MIC IN)] connector on the front section AUTO : The audio recording level is he

level even when sounds greater than the reference input level are input.

The recording level does not increase when the input level is low.

MANUAL: The recording level can be adjusted with @ DA2 AUDIO LEVEL control on page 13.

(DA3 AUDIO MODE SELECT) switch

Selects the audio recording level adjusting method for the [DA3 IN] connector on the rear panel. **AUTO**: The audio recording

level even when sounds greater than the reference . The audio recording level is held at the reference input level are input

MANUAL: The recording level can be adjusted with ® DA3 The recording level does not increase when the input level is low.

(a) IDA4 AUDIO MODE SELECTI Switch

AUDIO LEVEL control

Selects the audio recording level adjusting method for the [DA4 . The audio recording level is held at the reference IN (MIC1 IN)] connector on the front section.

AUTO : The audio recording level is held a

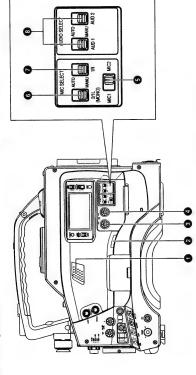
level even when sounds greater than the reference input level are input.

The recording level does not increase when the

MANUAL: The audio recording level can be adjusted with @

DA4 AUDIO LEVEL control.

[Audio Setting Section]



Monitoring loudspeaker

- Enables EE monitoring of the input audio signal during recording, in the record-pause mode or in the stop mode.
 - Outputs the playback sound in the playback mode.
- The PCM audio channels to be output can be selected using the AUDIO DISPLAY switch on page 16.
- The loudspeaker volume can be adjusted with the AUDIO MONITOR control.

phone is plugged into the EARPHONE jack. The warning The audio from the loudspeaker is defeated when an earalarm tones are also output through this loudspeaker. For details, see pages 81 and 82.

Lithium Battery Installation Case

90 is delivered without the battery installed. Install the lithium battery provided (CR2032). See page 34 for information about Installs a lithium battery in this case. The battery is used for the backup of the time code and the date/time data. The DY how to install it.

(AUD1 LEVEL) control

Adjusts the recording level of the audio signal input to the [AUD IN] terminal on the rear panel. This control is effective when AUDIO 1 SELECT switch is set to the "AUTO" position.

(A) [AUD2 LEVEL] control

Adjusts the recording level of the audio signal input to the [AUD 2 INJ terminal on the rear panel. This control is effective when AUDIO 2 SELECT switch is set to the "AUTO" position

[5] [MIC1/MIC2] select switch

: Records the audio signal of the microphone Select the camera's microphone mode with this switch.

connected to the [MIC1] connector. : Records the audio signal of the microphone connected to the [MIC2] connector.

Selects the recording level adjusting method for the camera G [MIC2/1L (MONO)] auto/manual select switch

- Microphone of MIC 2 connector. microphones:
- Monaural microphone of MIC 1 connector
- MIC 1 or MIC 2 can be selected with the @[MIC1/MIC2] SELECT switch. Stereo microphone L channel of MIC 1 connector
 - The audio recording level is held at the reference level even when sounds greater than the reference input level are input.
- The recording level does not increase when the
- : The recording level can be adjusted with **②** (MONO) 2/1L REC LEVEL control on page 13. input level is low.

MANO

[MIC1R] auto/manual select switch

This switch selects the recording level adjusting method for the R-channel of the stereo microphone connected to the [MIC1] connector.

level even when sounds greater than the reference : The audio recording level is held at the reference input level are input.

: The recording level can be adjusted with **1** TREC LEVEL control on page 13. input level is low.

MANU

The recording level does not increase when the

⑤ [AUD1•2] auto/manual select switch

Selects the recording level adjusting method for the audio Selection is made for each signal input to AUD 1 IN and AUD signals input to the AUDIO INPUT connectors on the rear panel. 2 IN connectors separately.

AUTO : The audio reco

: The audio recording level is held at the reference level even when sounds greater than the reference input level are input.

The recording level does not increase when the input level is low.

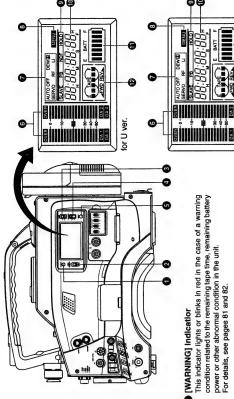
: The recording level can be adjusted with 6 or 0 AUDIO REC LEVEL control. MANO

the TC DISP switch in the time code/setup menu setting block is set to TC. If it is set to SUB TC, the date and time data is displayed in its place.

2. CONTROLS, INDICATORS AND CONNECTORS

2-3 Right Side Section (Cont'd)

VCR Display]



[WARNING] indication

This indicator lights or blinks in red in the case of a warning condition related to the remaining tape time, remaining battery power or other abnormal condition in the unit. For details, see pages 81 and 82.

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for E ver.

[AUDIO MONITOR] switch

This switch is used for selection of the PCM audio channel for the audio level meter, audio monitor output or the audio playback output.

DA1/DA2: Audio signals from the PCM audio DA1 and DA2 channels are output.

DA3/DA4 : Audio signals from the PCM audio DA3 and DA4 channels are output.

Press to reset the CTL counter value.
 Pressing the button during time code or user's bit presetting operation resets the time code or user's bit data to

(G) [RESET] button

 Shows the audio input level of the DA1 and DA2 channels in For selection of the audio channels to be displayed, use the The peak output level is held for approximately 2 seconds.

Audio level meters

.00:00:00:00.

the record mode or EE mode. AUDIO MONITOR switch. The level meter activated immediately after the power is switched ON. This is not a maffunction.

Note:

Note:

Regardless of this switch the DA1/DA2 channel audio signal is in playback the during Search Mode.

© [LIGHT] switch

Turns the display back light ON or OFF.

ON : The display is back-lighted.

OFF : The display is not back-lighted.

(Keep this switch to OFF during battery operation of the DY-90 or when it is required to reduce the power consumption for a certain reason.)

[COUNTER] switch

Selects the contents displayed on the LCD counter

: Set to this position to display the CTL counter 유

: Set to this position to display the user's bits of time : Set to this position to display time codes or when presetting the time code.

 Time codes or user's bits can be displayed provided that codes or presetting the user's bit.

E-15

2-3 Right Side Section (Cont'd

Warning indicators

drum stopped, etc.) occurs with the VCR. This indicator also ights when a non-recoverable error (e.g. tape winding error, AUTO OFF indicator

lights if condensation occurs.

For details, see "TROUBLES WITH ERROR CODE OUT-PUTS" on page 84.

Lights when condensation (dewing) occurs on the drum or other mechanism in the unit. DEW indicator

Displays the setup menu data when the DY-90 is in the setup menu mode by pressing **@** MENU button on page 18. The

setup menu includes the hour meter (drum operating time).

This section shows an error code when an abnormal

condition occurs with the VCR. For details on the counter display, see page 22.

When the condensation has disappeared, the indicator turns The unit rejects all operations while this indicator is lit. off and the unit accepts operations again.

Lights when the drum servo is troubled during recording to indicate that normal recording is not being made. SERVO indicator

The head clog is detected during back-space between different scenes. Note that it is not detected during recording. Lights when the video head is clogged.

See the manual for the head cleaning tape (DCL-5) which is specifically made for this unit. Should this indicator light up, clean the head using the special head cleaning tape.

This is the lithium battery indicator which lights when the lithium battery which backs up data of the built-in time code

generator is nearly exhausted and indicate the necessity of

See page 34 for information about How to Replace Backup Lithium Batteries.

MENU indicator

This indicator lights when the setup menu mode is engaged by pressing

MENU button on page 18.

 Time code-related indicators SLAVE indicator

This is the slave lock indicator which lights when the built-in time code generator is slave-locked (synchronized) with the LTC time code signal input at the TC IN connector. For the slave lock of the time code, see page 58.

This is the time code playback indicator which lights when the time code is in playback mode. PB indicator

This is non-drop frame indicator which lights when the framing mode of the built-in time code generator or the reproduced time code in play mode is in the non-drop frame mode. • If lights permanently when the CTL counter is in use. This indicator does not light in drop frame mode. NDF indicator (U-ver. only)

Lights when the time code generator display is held by press-HOLD indicator

ing the HOLD button in the time code setting block.
The time code or user's bit can be preset while this indicator

Shows the remaining battery power with a 7-dot segment bar Remaining battery power indicator

To display the remaining battery power accurately, set the setup menu item "BATI. TYPE SELECT" according to the type of the battery pack in use.
 To retails on the remaining battery power display, see page 22.

Cassette/tape direction/remaining tape time indica-



tors

: Lights when the unit is loaded with a cassette tape. Blinks during ejection or tape : One of the indicators lights according to the tape transport direction. Tape direction FWD REV Remaining tape: The remaining tape situation is shown with a 6-dot segment bar display. E TAPE F

For details on the remaining tape display, see page 22.

2-3 Right Side Section (Cont'd)

2. CONTROLS, INDICATORS AND CONNECTORS

VCR Setup Block]

Usually, this section shows the data of the CTL counter, time

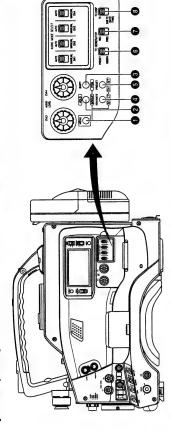
Counter display

code or user's bit. The display mode can be selected with

the @ COUNTER switch.

* With the COUNTER switch set to "TC" or "UB", when TC DISP switch on page 18 is set to the "SUB TC"

position, time and date are displayed.



[MENU] button

Press this button to enter the setup menu mode.
When the setup menu mode is engaged, the "MENU" indicator in the LCD display lights and the counter display is changed to

In the setup menu mode, pressing this button resumes the the menu indication. normal mode

MINOLD/GROUP] button

 Press when presetting the time code or user's bit. The presently displayed data is held (the HOLD indicator lights on the display) and the leftmost digit of the counter blinks. Pressing this button during time code or user's bit presetting cancels the operation and recalls the previous display

In setup menu mode, this button is used to select the menu

(SHIFT/ITEM] button

 During time code or user's bit presetting, press to select the digit to be set. Each press of the button shifts the digit to be set (which blinks) to the right.

In setup menu mode, this button is used to select the menu

[ADVANCE/SELECT] button

 During time code or user's bit presetting, press to select the value of the digit to be set. Each press of the button increases the number by 1.

 In setup menu mode, this button is used to select the value of a menu item.

(PRESET/DATA SET) button

During time code or user's bit presetting, press to save the set value in the preset memory. The set time code or user's bit will be preset in the time code generator.

In setup menu mode, this button is used to save the menu item setting the data in the memory. For details of the time code or user's bit presetting, see page

56.
For details on the setup menus, see page 62.
The buttons from Ø to Ø above are also used in setting the date and time of SUBTC data. For the date and time setting,

Time code generator setting switches

⑤ [PRESET/REGEN] switch

Selects the time code generator mode between PRESET and REGEN

setting and recording the time code. Also use this position when the unit is to be slave-locked to an PRESET: Preset mode. Set to this position when newly preexternal time code generator connected to the TC N connector.

time codes on the tape and records time codes by succeeding them. Set to this position when you want to connect additional time codes to a tape in which time codes have already been recorded as Regeneration mode, in which the unit reads existing far as the middle REGEN

(REC/FREE) run switch

erator is in preset mode. This switch is not effective in the REC : The time code runs only during recording. This position Selects the time code running mode while the time code gen-REGEN mode.

FREE: The time code runs permanently. Set to this position allows you to record continual time codes when recording scenes one after another.

when the unit is slave-locked with an external time code generator.

after another, the time codes become discontinuous If this position is used when recording scenes one at the change points between scenes.

(TC DISP] switch

When the COUNTER switch on page 16 is set to TC or UB, it selects the type of time code to be displayed on the counter

SUBTC : Data in another time code area (sub-time code area) is displayed. This unit records the date and : Ordinary time codes or user's bits are displayed display.

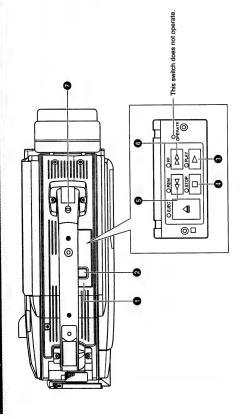
For details, see "SUB-TIME CODE" on page 60. time data in this area.

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see page 61.

2. CONTROLS, INDICATORS AND CONNECTORS

2-4 Top Section



Operation cover

Open this cover when operating the playback mode. Otherwise keep this cover closed.

[EJECT] button

Press to eject the cassette tape. It can be pressed even when the operation cover is closed. The LED indicator above the EJECT button lights up during the ejection operation.

[PLAY] button

Press to start playback. In play mode, the unit outputs the video and audio signals of normal playback and the LED indicator above the PLAY button lights.

The audio output during this period is the linear track audio. The same audio signals as as the PCM audio DA/IDA2 channels are recorded on the linear tracks of the tape. The PCM audio DA3 and DA4 channels are not recorded If the auto tracking is active at the moment the play mode starts, the playback video will be interfered with digital noise. on the linear tracks.

[STOP] button

takes more time than usual to enter the record or play mode from the tape protect mode. The LED indicator above the STOP mode. However, when stop mode has continued for about 30 minutes, the VCR section enters tape protect mode, in which Press to enter stop mode. The drum keeps rotating in stop the drum stops rotation and the tape tensioner is released. It button lights in stop and tape protect modes.

The time until tape protect mode is initiated can be set to 1,
 5 or 30 minutes with setup menu item "LONG PAUSE TIME

(G [REW] button

Press to rewind tape.

 Pressing the button in stop or fast forward mode initiates rewind mode. The LED indicator above the REW button lights · Pressing the button during playback or forward search in this mode.

The search audio recorded in the linear track is reproduced speed. The LED indicators above the PLAY and REW buttons light during reverse search. during reverse search.

initiates reverse search at about 6 times the normal play

(FF) button

Press to fast forward tape.

· Pressing the button in stop or rewind mode initiates fast forward mode. The LED indicator above the FF button lights in this mode

Pressing the button during playback or reverse search initiates forward search at about 6 times the normal play speed. The LED indicators above the PLAY and FF buttons The search audio recorded in the linear track is reproduced light during forward search.

Back tally lamp

during forward search.

This lamp lights up when this unit enters the record mode. It blinks during the transition to the record mode. It also blinks

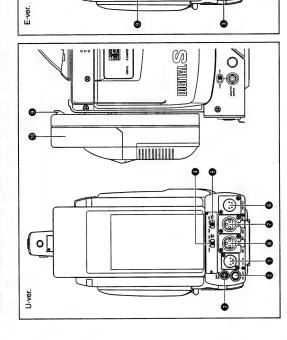
when an error occurs on the DY-90.

 This lamp does not light up when the "BACK TALLY" item in the camera's main menu screen is set to OFF. (See page 67.)

The buttons (2) ~ (5) are not effective during recording. Note:

2. CONTROLS, INDICATORS AND CONNECTORS

2-5 Rear Section



⑤ [EARPHONE] earphone jack

Power input connector for 12 V DC. Connect with the optional When a cable is connected here, the power supply from the battery pack is interrupted and the source is switched to the

AA-G10 or AA-P250 battery charger. (IDC IN] connector (XLR 4-pin)

٦

0 0

itoring earphone. Plug in a 3.5 mm dia. earphone or head-This is a stereo mini-jack for use in connecting an audio monphone plug.

The earphone can also be used to monitor alarm tones de-The sound from the monitoring loudspeaker is interrupted when pending on situations.

[DA1 IN LINE/MIC] select switch (U-ver.)

an earphone is connected here.

Signal

ġ **@**

power supplied through this connector.

GNB ١

Θ •

Set to this position when connected to the audio Select the audio signal input to the

DA1 IN connector. LINE

: Set to this position when the microphone is connected. The reference input level is -60 dBs. +48 V power supply (JVC MV-P615, etc.) is Set to this position when the microphone requiring equipment, etc. The reference input level is +4 dBs +48V ON Σ

DC12V

A +48 V DC is supplied from this connector

Power output connector to a wireless microphone transmitter, etc. The supply voltage is identical to the voltage supplied to the unit (DC 12V max. 0.1 A).

(DC OUT) connector

[AUD1 IN LINE/MIC] select switch (E-ver.)

Signal

Ö Θ **@ 6** €

GND

: Set to this position when connected to the audio Set to this position when the microphone is conequipment, etc. The reference input level is +4 dBs. Select the audio signal input to the

AUD1 IN connector. ¥

+48 V power supply (JVC MV-P615, etc.) is con-Set to this position when the microphone requir-+48V ON

nected. The reference input level is -60 dBs.

MIC

DC12V (Power through)

(Surface profile)

A +48 V DC is supplied from this connector.

19

[DA3 IN LINE/MIC] select switch (U-ver.)

Select the audio signal input to the **@** DA3 IN connector.

LINE : Set to this position when connected to the audio equipment, etc. The reference input level is 44 Bs.

MIC : Set to this position when the microphone is connected. The reference input level is -60 dBs.

+48 V power supply (JVC MV-P615, etc.) is con-+48V ON

: Set to this position when the microphone requir-

읮

A +48 V DC is supplied from this connector.

G [AUD2 IN LINE/MIC] select switch (E-ver.)

equipment, etc. The reference input level is +4 dBs. : Set to this position when the microphone is con-Set to this position when connected to the audio Select the audio signal input to the 🕡 AUD2 IN connector.

: Set to this position when the microphone requirnected. The reference input level is -60 dBs. 일

+48 V power supply (JVC MV-P615, etc.) is con-A +48 V DC is supplied from this connector. +48V ON

(XLR OUT) connector (XLR 5-pin)

Outputs the PCM audio DA1/DA2 or DA3/DA4 channel signals in analog audio.

The audio channels to be output can be selected by the OAUDIO MONITOR switch on page 16. Outputs the input audio signal in the record, record-pause

and stop modes.

 Outputs the playback audio signal in the playback mode. Alarm sound is not output.



Signal	GND	DA1/3 (H)	DA1/3 (C)	DA2/4 (H)	DA2/4 (C)
ġ	-	2	3	4	S

Connect the external audio equipment or microphone to this (TDA3 IN] DA3 input connector (XLR 3-pin) (U-ver.)

The audio signal from this connector is recorded on the DA3 of the PCM audio channel. ing to the connected equipment.

BATTERY PACK" on page 36.

* It is not recorded on the linear track of the tape for audio

Connect the external audio equipment or microphone to this connector. Set the (a) AUD 2 IN LINE/MIC select switch ac-7 [AUD2 IN] Audio 2 input connector (XLR 3-pin) (E-ver.) cording to the connected equipment.

Connect the external audio equipment or microphone to this connector. Set the **@** DA1 IN LINE/MIC select switch accord-The audio signal from this connector is recorded on the DA1 [DA1 IN] DA1 input connector (XLR 3-pin) (U-ver.) ing to the connected equipment.

(AUDIO IN connector)

It is recorded on the linear track of the tape for audio search.

of the PCM audio channel.



Signal	GND	НОТ	COLD	
NO.	-	2	3	

Connect the external audio equipment or microphone to this connector. Set the

AUD 1 IN LINEAMIC select switch ac-(E-ver.) [AUD1 IN] Audio 1 input connector (XLR 3-pin) cording to the connected equipment.

signal from the audio input connectors (0), (0) is recorded, see page 64. For information about which channel of the tape the audio

(AUDIO IN connector)



Signal	GND	нот	COLD
į	-	2	က

Battery case release button

Push to unlock the battery case cover. The battery case cover should be opened while pushing this button

For battery information and the attaching/detaching method of the battery, see page 35. Mount the Anton-Bauer battery pack here.

Battery holder

tery pack. For details, see "USING JVC'S NB-G1 OR FLAT SHAPE TYPE Load a Flat Shape Type battery pack or the JVC NB-G1U bat-Battery case

2-6 Counter Display Contents (U-ver.)

CONTROLS, INDICATORS AND CONNECTORS

The counter display shows the following 4 types of information.

Tape counter display

The counter display usually functions as a tape counter (hour, minute, second, frame). It can be switched to a CTL counter, time code or user's bit display by using the COUNTER switch.

CTL counter Time display Time code User's bit 100:00:00:00:00 Hr. Min. Sec. Frame COUNTER switch Tape counter display TC SUB TC TC DISP

(Provided that the TC DISP switch is set to TC)
• CTL counter: Time between –9 hr. 59 min. 59 sec. 29 frames and 9 hr. 59 min. 59 sec. 29 frames

: Time between 0 hour and 23 hr. 59 min. 59 sec. 29 frames can be displayed.

can be displayed

Time code

User's bit

: Hexadecimal number from 0 to F is displayed

in 8 digits.

By setting the TC DISP switch under a cover on the right side panel to SUB TC, the time and date data can be dis-

In case of VCR error Date display ## To ... ■ To ... 19 38 Mon. button [MENU]

Setup menu setting display ,5) button 4.40 [GROUP

4. Error code display

Press the MENU button to switch to the VCR setup menu

setting display.

TC: The time (hour, minute, second, frame) is displayed. UB: The date: (month, day, year) is displayed.

When the COUNTER switch is set to

played here.

After having set the setup menus, press the MENU button to return to the tape counter display. For details, see "VCR SETUP MENUS" on page 63. This display is used when setting the setup menus Setup menu setting display

The hour meter is displayed in the setup menu Group 1. The hour meter data refers to the head drum running time. Hour meter display

The error code is displayed automatically in case an abnormal condition occurs with the VCR section. For details of error codes, see "THOUBLES WITH ERROR CODE OUTPUTS" on page 84. Error code display

The 6-dot segment bar display shows the remaining tape time in record and play modes. The lighted segment bars decrease as

the remaining tape decreases. The reference tape time is as shown below.

. Lighted. : Lighted.

Remaining Tape Time Display

1:dr-02 00.

3. Hour meter display

Remaining Battery Power Display

The 7-dot segment bar display shows the remaining battery power. The lighted segment bars decrease as the remaining battery power decreases.

 To display the remaining battery power accurately, set the setup menu item "BATT.TYPE SELECT" according to the type of the battery pack in use.

10 to 15 minutes of remaining tape. (This display represents the begining of the tape in the case of DS-10 tape.)

More than 25 minutes of remaining tape. ("F" extinguished.)

E TAPE E TAPE E TAPE E TAKE

Near the beginning of tape

E TAPE F

All segment bars light when a fully-charged battery pack is attached.



Less than 2 minutes of remaining tape. (The last dot and "TAPE" blink.)

2 to 5 minutes of remaining tape.

The last 2 segment bars and "BATT" start to blink when the battery is nearly exhausted. Replace with a fully-charged battery pack.

崇冰作

> When the tape has ended completely, a warning is provided by an alarm tone, etc.
>
> The remaining tape information is not displayed when no cassette tape is loaded or during the remaining tape calculation

("TAPE" and "E" blink.)

End of tape.

WINDER OF THE PROPERTY OF THE

which takes place immediately after a cassette tape is insert-

When the battery capacity has run out, "E" and "BATT" blink and the unit stops operation automatically.

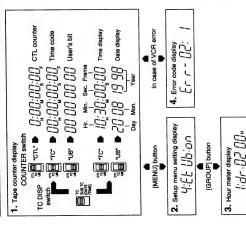
21

U-22

23

2. CONTROLS, INDICATORS AND CONNECTORS

2-6 Counter Display Contents (E-ver.)



Remaining Tape Time Display

The 6-dot segment bar display shows the remaining tape time in record and play modes. The lighted segment bars decrease as the remaining tape decreases. The reference tape time is as shown below.

red.	Near the beginning
(: Lighted. : .: Dilinke	E TAPE F

- When the tape has ended completely, a warning is provided by an alarm tone, etc.
- The remaining tape information is not displayed when no cassette tape is loaded or during the remaining tape calculation which takes place immediately after a cassette tape is insert-

The counter display shows the following 4 types of information.

The counter display usually functions as a tape counter (hour, Tape counter display

- minute, second, frame). It can be switched to a CTL counter, time code or user's bit display by using the COUNTER switch. (Provided that the TC DISP switch is set to TC).

 CTL counter: Time between 9 hr. 59 min. 59 sec. 24 frames and 9 hr. 59 min. 59 sec. 24 frames can be displayed. Time code
 - : Time between 0 hour and 23 hr. 59 min. 59
 - sec. 24 frames can be displayed. Hexadecimal number from 0 to F is displayed in 8 digits User's bit

By setting the TC DISP switch under a cover on the side panel to SUB TC, the time and date data can be displayed

- TC: The time (hour, minute, second, frame) is displayed. UB: The date: (day, month, year) is displayed. When the COUNTER switch is set to
- Press the MENU button to switch to the VCR setup menu setting display.

Setup menu setting display

This display is used when setting the setup menus. After having set the setup menus, press the MENU button to return to the tape counter display. For details, see "VCR SETUP MENUS" on page 63.

The hour meter is displayed in the setup menu Group 1. The hour meter data refers to the head drum running time. Hour meter display

Error code display

For details of error codes, see "TROUBLES WITH ERROR CODE OUTPUTS" on page 84. The error code is displayed automatically in case an abnormal condition occurs with the VCR section

The 7-dot segment bar display shows the remaining battery power. The lighted segment bars decrease as the remaining battery

Remaining Battery Power Display

 To display the remaining battery power accurately, set the setup menu item "BATT. TYPE SELECT" according to the type of the battery pack in use.



冰作

The last 2 segment bars and "BATT" start to blink when the battery is nearly exhausted. Replace with a fully-charged battery pack.



When the battery capacity has run out, "E" and "BATT" blink and the unit stops operation automatically.

2. CONTROLS, INDICATORS AND CONNECTORS

SOOM servo control lever

Pushing this lever in the W direction makes the lens move the servo zoom feature with this lever, set the ZOOM knob (Pushing this lever in the T direction makes the lens move tighter. Pushing harder changes the speed of the Zoom. To operate

RIS mode switch

- A : Activates the auto iris featureM : Allows manual iris control.

When the IRIS MODE switch is at M, pushing this button activates the Auto Iris Function while it is held down only. Momentary auto iris button

IRIS speed adjusting control

Protect the lens with a Clear or UV filter by screwing on to the Adjusts the iris operation speed. front inside of the lens hood. **© FILTER screw**

Other filters can be used for various effects. COOM mode knob

S : Servo Zoom mode. Allows operation by the Zoom Servo M : Manual Zoom mode. Allows zoom control by the Zoom Control lever .

REMOTE FOCUS control connector

lever/ring @.

To connect with an optional focus servo unit.

Connect with an optional zoom servo unit. ■ ZOOM servo connector

0

BACK FOCUS ring/fixing screw

Secure with the Screw knob after adjustment. For Set-up Back Focus adjustment only.

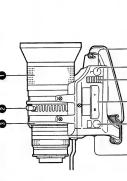
Macro focusing ring (for close-up shooting)

Normal focus adjustment and zooming are not available in the By rotating this ring in the direction of the arrow, the lens becomes capable of close-up shooting of very small objects. macro mode.

To shoot images in the macro mode, set the focus ring to the infinite position and the zoom ring to the widest angle position. To adjust the focus of the macro image, rotate this ring in the direction of arrow until the object is focused.

CAUTION:

After the required operation, be sure to return the macro ring The back-focus knob is located close to the macro ring, be careful not to mistake the back-focus knob for the macro ring. to the normal position.



700000

Manual focus ring. FOCUS ring

This is the manual zoom ring equipped with a zoom lever. To activate the zoom feature on, turn the zoom mode knob **(4)** to **200M lever/ring** position "M".

Manual Irisi ring. To activate the auto iris feature, set the Iris Mode switch

to A. IRIS ring

[VTR] Trigger button

To stop shooting push again. To start shooting push once.

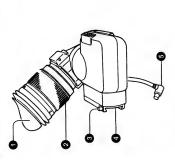
[RET] return video button

The return video signal from the VCR section can be monitored on the viewfinder only while pushing this button.

The Viewfinder Status display is not available during this

2. CONTROLS, INDICATORS AND CONNECTORS

2-8 1.5-Inch Viewfinder VF-P116 (optional



The Eyepiece can be opened to view the screen directly. Blocks light to viewfinder screen and holds eye optics.

Rotate this ring to adjust the viewing angle. Be sure to adjust this ring because the viewing angle affects the lens focus adjustment. To perform more reliable focus adjustment, it is recommended B Eyepiece focusing ring

Stopper screw

to turn on the contour with the PEAKING control @

This stopper screw prevents the viewfinder from coming off the camera.

Viewfinder shoe

Attaches to the Viewfinder Mount base on camera

6 Cable

Connect to camera viewfinder connector.

Tally switch

Set this switch to off if you do not want to inform the subjects

by the Tally light that they are being recorded.

No : Lights the Tally lann Φ during recording.

OFF : Does not light the Tally lann Φ .

However, the REC lann at the eyepiece will not turn off.

D Tally light

Lights when recording is in progress. The light does not come on when the Tally Switch @ is at "OFF".

Rotate to adjust the contour of the viewfinder screen image.

@ [PEAKING] peaking (contour) control

(CONT) contrast

Controls the level of Viewfinder contrast.

@ [BRIGHT] brightness

Controls the level of Viewfinder brightness.

2. CONTROLS, CONNECTORS AND INDICATORS

2-9 Viewfinder Display

WARNING INDICATORS INSIDE THE VIEWFINDER

The viewfinder has two LED indicators below the screen. These LEDs light or blink to indicate the present status of the camera or the VCR's camera control unit. [BATT] BATTERY LIGHT

This blinks red when battery voltage becomes too low for the camera to operate This lights when the battery has run out.

REC/ALARM LIGHT

This lights green for these conditions. Solid Green : While recording. Blinks Green : • While the VCR prerolls before recording.

P BATT ALARM P

BATT LIGHT

REC/ALARM LIGHT

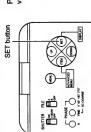
If the Tape is finishing.
 If the VCR Malfunctions

VIEWFINDER SCREEN DISPLAY

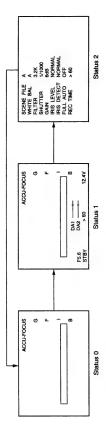
The viewfinder screen displays the following information, however, these are not displayed during VCR playback.

- Status screens (screens for use in checking the current camera setup)
- Alarm message display
 - Safety zone display
- Setting screen (screen for use in the camera setup)
 - Auto white balance display
- Shutter speed display

Status Screens



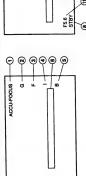
Press the SET button during normal screen to display one of the status screens on the viewfinder. One of the three status screens will be displayed every time the button is pressed.



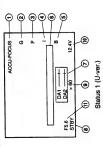
27

2. CONTROLS, CONNECTORS AND INDICATORS

2-9 Viewfinder Display (Cont'd)

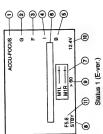


Status 0



SCENE FILE A
WHITE BAL
SHUTTER 1/1000
GAIN
FILS LEVEL NORMAL
FILL AUTO
FILL

Status 2



Status 0

	_	Т		_	_	_	_	5		5	_	7	
Function	Blinking or displayed during the ACCU-FOCUS operation.	Displayed when the Shutter or V. Scan is ON.	Displayed when the Full Auto Shooting is ON.	Indicator which appears when the individual ALC is ON.	Displayed in other modes than 0 dB, LOLUX and ALC.	Displayed during LOLUX operation.	Displayed when the FAW is ON.	Displayed when the Auto iris level is set to the back light or	spotlight operation.	Displayed during the black stretch or black compression switch	operation.	See the table below.	
Display	ACCU-FOCUS	ø	FAS	ALC	g	J	ш	_		6		Event display	
Display	Θ				0		0	⊚		(9)		•	

Event display
 Event is displayed for only about 2 seconds on the viewfinder screen when any of the following switches is operated.

Switch		Event Display Contents
ZEBRA	ZEBRA	ON, OFF
BLACK STRETCH/	BLACK	STRETCH, NORMAL, COMPRESS
BLACK COMPRESS		
GAIN	GAIN	-3 dB, 0 dB, 6 dB, 9 dB, 12 dB, 18 dB, ALC
WHT. BAL	WHITE BAL	A, B, PRESET, FAW
FULL AUTO	FULL AUTO	ON, OFF
IRIS	IRIS	BACK.L, NORMAL, SPOT.L
ТОГЛХ	rornx	ON, OFF
FILTER control	FILTER	3.2K, 5.6K, 5.6K+ND, EFECT
FILE	SCENE FILE	A. B. OFF
VTR	VTR	STBY, SAVE
AUTO KNEE	AUTO KNEE	ON, OFF

2. CONTROLS, CONNECTORS AND INDICATORS

2-9 Viewfinder Display (Cont'd)

Status 1

In addition to the information on the status 0 screen, this screen displays information on the audio indicator, accumulated recording time, voltage and lens F number.

		Note: The level meter activated immediately after the power is switched ON. This is not a malfunction.				
Function	Shows the audio input channel and input level. Input channel indication is changed depending on the settling of the ADIOI WONITOR switch. Display ON/OFF can be selected by the menu screen. For details on "AUDIO DISPLAY", see page 67.	Shows the audio input channel and input level. Input channel indication is changed depending on the setting of the AUDIO DISPLAY switch. Display ON/OFF can be selected by the menu screen. For details on "AUDIO DISPLAY", see page 67.	VCR in standby mode VCR in save mode VCR in save mode VCR in record mode VCR in second mode VCR in selvioward mode VCR in ewind mode VCR in ewind mode VCR in ewind mode	Remaining tape indication (displayed in 1-minute steps) Time code display Time code display is available when the 'REC TIME' item on the advanced menu screen is set to TIME CODE. For details on 'REC ITIME', see page 69.	Voltage indication (displayed in 0.1 V steps) When an Anton-Bauer battery is connected and if the remaining battery power is defected, it shows the remaining battery power displayed as a percentage (%) figure. (In this case, the voltage indication is not displayed.)	Shows the F number of the connected lens. It is not displayed when the larens is emroved. As for for some lenses, no display appears. Display ONIOFF can be selected in the menu screen. For details on "F NO DISPLAY", see page 67.
Display	① DA1+ (U-ver.) DA2+ (example)	(E ver.) M1L+ (E ver.) M1R+ (example)	STBY SAVE STOP HEC FF REW EJECT	> 60 (Example) 12⊦ 34₄ 56s 20೯	12.4 V (example) 50 % (example)	OPEN, F2, F2.8, F4, F5.6, F8, F11, F16, CLOSE
Display position	(U-ver.)	(E ver.)	•	•	(9)	(3)

Status 2

This screen displays the camera setup. Event display is not available while this screen is displayed.

Display	Display Contents
SCENE FILE	A, B, OFF
WHITE BAL	A, B, PRESET, FAW
FILTER	3.2K, 5.6K, 5.6K+1/16ND, EFECT (U ver.) 3.2K, 5.6K, 5.6K+1/4ND, 5.6K+1/16ND (E ver.)
SHUTTER	OFF, 1/100 (U-ver.) / 1/120 (E ver.), 1/250, 1/500, 1/1000, 1/2000, V.SCAN(1/60.5 to 1/1966.7); U-ver/(1/50.4 to 1/1953.1); E-ver, EEI (in ALC mode)
GAIN	-3 dB, 0 dB, 6 dB, 9 dB, 12 dB, 18 dB, LOLUX, ALC
IRIS LEVEL	BACK.L, NORMAL, SPOT L
IRIS DETECT	NORMAL, PEAK, AVG
FULL AUTO	ON, OFF
REC TIME	Tape remaining time or time code

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2. CONTROLS, CONNECTORS AND INDICATORS

2-9 Viewfinder Display (Cont'd)

■ Alarm Message Display



position Display Contents	LOW BATTERY The battery capacity is nearly exhausted.	VTR WARNING [HEAD] Head clog	VTR WARNING [SERVO] Servo error	VTR WARNING [DEW] Condensation	VTR WARNING [HARD] Hardware error	TAPE NEAR END Tape remaining time is less than approx. 3	minutes in the record mode	TAPE END Tape end reached	REC INHIBIT VTR trigger is pressed with a non-recordable	cassette (REC switch on the back of the cassette	is set to OFF) loaded	and the bearing in the second of the second
Display position	Θ	8				0	1					

2. CONTROLS, CONNECTORS AND INDICATORS

2-9 Viewfinder Display (Cont'd)

Safety Zone

Three types of safety zone can be displayed in the viewfinder. Select the required one with the SAFETY ZONE item on the main menu screen.



F + 1	Г	_	٦
	+	+	4
	L		٦





ZONE 3

Setting the Screen Display

SCENE FILE A
NASTER BLACK NORMAL
NASTER BLACK NORMAL
RESOLUTION NORMAL
BACK TALLY
RNO.DISPLAY ON
AUDIO DISPLAY ON
EATIN TON
STATIN TON

Screen for use in the date setting and other camera setups. See the flow of MENU screen on page 65.

■ Auto White Balance Display

AUTO WHITE A

This screen appears during the auto white balance adjustment operation to display various data.

See "White Balance Adjustment" on page 44.

Shutter Speed Display

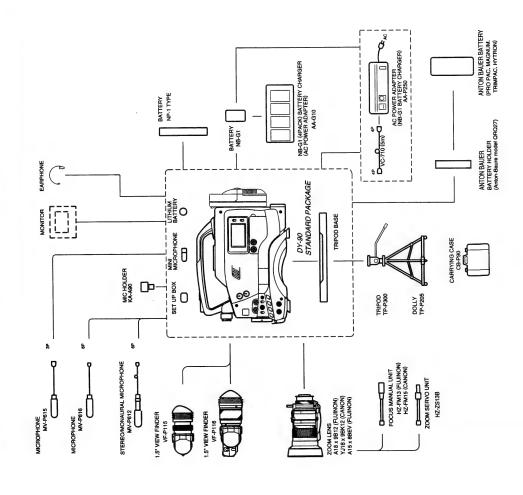
SHUTTER 1/1000

When the SHUTTER is on, a shutter speed is displayed. (for approx. 5 sec.) Also, whenever the shutter speed is altered by using the UP/DOWN button, the shutter speed is displayed. While this is displayed, other displays disappear. See [SHUTTER] on page 14.

3. BASIC SYSTEM CONNECTIONS AND ADJUSTMENTS

3-1 Basic System (U-ver.)

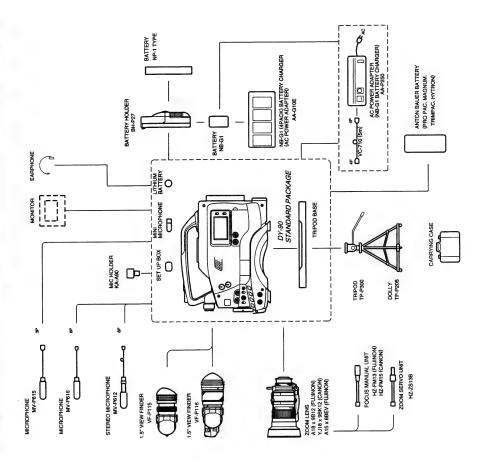
For information on connection with the individual attatchments, refer to the page describing the method for their respective connection.



3. BASIC SYSTEM CONNECTIONS AND ADJUSTMENTS

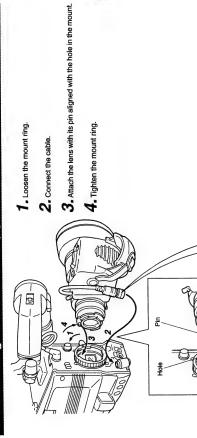
3-1 Basic System (E-ver.)

For information on connection with the individual attatchments, refer to the page describing the method for their respective connection.



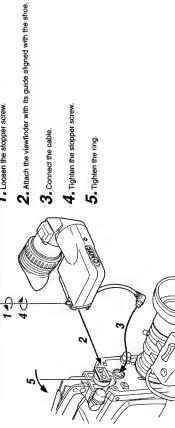
E-30

3-2 Attaching the Zoom Lens (optional)



When unplugging the cable, grasp this portion and pull up. If you have any difficulty, it may be better to remove the lens itself first. In this case, be careful not to drop the lens.

3-3 Attaching the Viewfinder (optional



I Loosen the stopper screw.

Front base

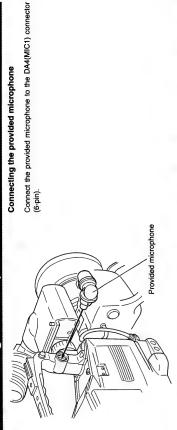
- 3. Connect the cable.
- 4. Tighten the stopper screw.
- 5. Tighten the ring.

Front mount clip

3. BASIC SYSTEM CONNECTIONS AND ADJUSTMENTS

3-4 Attaching the Microphone

Connecting the provided microphone



Attach the tripod base on the tripod by using the hole which

3-5 Attaching the Tripod Base

 $m{Z}_{\bullet}$ While pushing the safety lever, pull the lock lever toward the front until the front mount clip clicks into place.

Front mount clip 7. Tripod mounting holes

 $oldsymbol{3}_{\mu}$. Place the unit on the tripod base by aligning the rear base mount of the unit with the pin on the tripod base.

4. Push the unit from the upward direction and slide it toward the front so that the front base mount of the unit is locked by the front mount clip of the tripod base as it clicks into place.

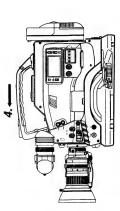
2. Lock lever

CAUTION:

 The front base mount may be locked while the pin of the mount of the unit. Therefore, after mounting, make sure that tripod base is not inserted into the hole on the rear base these parts are engaged properly.

. When moving the unit which is mounted on a tripod, any impact or vibration should be avoided as this may cause the Be sure to remove the unit from the tripod before moving it. unit to become detached and to drop from the tripod.

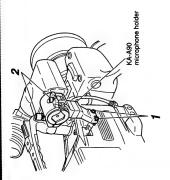
3. Rear base mount

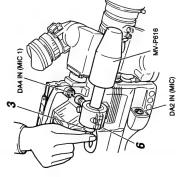


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3. BASIC SYSTEM CONNECTIONS AND ADJUSTMENTS

3-6 Attaching the Optional Microphone (U-ver.)





With the optional KA-A90 mic holder, the optional MV-P615/616 * When using the MV-P612 microphone, set the DA4(MIC1) mode (mono) and MV-P612 (stereo/mono), microphones can be used. switch on the MV-P612 to "mono" (monaural).

- Secure the mic holder with 2 screws.
- $oldsymbol{2}_{oldsymbol{*}}$ Turn the small knob located on the outer side of the mic holder anticlockwise to loosen it, and loosen the large knob located Rotate the large knob fully anticlockwise to open the holder. on the inner side in the same way.
- Attach the microphone to the mic holder so that the microphone does not interfere with the cassette holder. With microphone does not interfere with the Leftricht sides are a stereo microphone, make sure that the left/right-sides are
 - 4. Set the mic holder so that the height is level, and tighten the inside and outside knobs to secure the microphone.
- When the MV-P616/MV-P612 is used, connect the microphone's 6-pin connector to the DA4 input connector Connect the microphone cable to the mic input connector. of this unit Ċ,
- When the MV-P615 is used, connect the microphone's XLR 3-pin connector to the DA2 input connector of this unit. (Use When the microphone is connected to DA1 or DA3 input connector on the rear panel, set the MIC +48 V ON switch only phantom microphone)
- **6.** Secure the microphone cable using the cable clamp located on the side of the mic holder.

according to the microphone used.

- · When the light mounted on the camera is used at the same time, if the microphone in use has a long sound collecting section (ultra-directional type, etc.), the micro-
- When using a KA-A70 mic holder, noise may interfere with the audio signal. In this case, use a KA-A90 mic phone's shadow may influence the image. holder instead.
- When using the MV-P612 in the stereo mode, or the broad-directional microphone, noise of this unit may be

3. BASIC SYSTEM CONNECTIONS AND ADJUSTMENTS

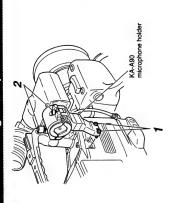
3-6 Attaching the Optional Microphone (E-ver.)

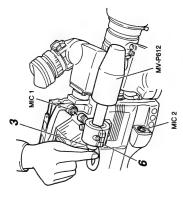
With the optional KA-A90 mic holder, the optional MV-P615/616

(mono) and MV-P612 (stereo), microphones can be used.

Secure the mic holder with 2 screws.

2. Turn the small knob located on the outer side of the mic holder anticlockwise to loosen it, and loosen the large knob located





4. Set the mic holder so that the height is level, and tighten the inside and outside knobs to secure the microphone.

correct.

3. Attach the microphone to the mic holder so that the microphone does not interfere with the cassette holder. With a stereo microphone, make sure that the left/right-sides are

Rotate the large knob fully anticlockwise to open the holder.

on the inner side in the same way.

 When the MV-P616/MV-P612 is used, connect the microphone's 6-pin connector to the MIC1 connector of this 5. Connect the microphone cable to the mic input connector.

• When the MV-P615 is used, connect the microphone's XLR 3-pin connector to the MIC2 connector of this unit. (Use only phantom microphone)

When the microphone is connected to AUD1 or AUD2 connector on the rear panel, set the MIC +48 V ON switch according to the microphone used. $oldsymbol{6}$. Secure the microphone cable using the cable clamp located on the side of the mic holder.

Note:

time, if the microphone in use has a long sound collecting section (ultra-directional type, etc.), the microphone's When the light mounted on the camera is used at the same shadow may influence the image

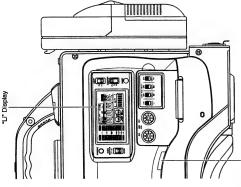
When using a KA-A70 mic holder, noise may interfere with the audio signal. In this case, use a KA-A90 mic holder instead. Note:

U-35

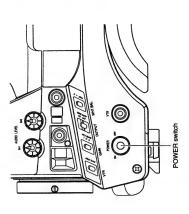
3. BASIC SYSTEM CONNECTIONS AND ADJUSTMENTS

3-7 How to Replace Backup Lithium Batteries

install the provided lithium battery before actually using the unit. (Lithium battery: CR2032) This unit uses a lithium battery to backup the time code and date/time data.



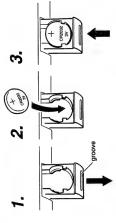
Lithium battery case



If the unit is not used for a lengthy period of time, remove the lithium battery. If the voltage of the lithium battery is low, the set may malfunction. CAUTION

When the lithium battery is not in place or the battery is running down and requires a replacement, the "Li" in the LCD display will ight up. Replace lithium batteries with the POWER switch set to ON.
 Doing it with the POWER switch set to OFF will cause the loss of backup data.

How to Install the Lithium Battery



I. Place a flat-blade screwdriver in the groove of the lithium battery case and lower it.

 $oldsymbol{Z}_{oldsymbol{ iny}}$ Slide the battery into place with its + marked surface facing

3. Push the lithium battery case back into the unit.

How to Remove Lithium Batteries



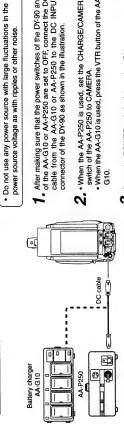
POWER SUPPLY (for U-ver.)

This unit is operable with the AC power supply or battery pack.

4-1 AC Operation

Note:
 Do not remove or connect the DC cable while recording is being performed.

Use the JVC AA-G10 battery charger (max. rated output 3.5A, 12.5 V DC) or AA-P250 battery charger (max. rated output 3.5A, 12.5 V DC) as the AC power supply.



After making sure that the power switches of the DY-90 and I the AA-G10 ox AA-P20 are set to OFF connect the DC cable from the AA-G10 or AA-P20 to the DC INPUT connector of the DY-90 as shown in the illustration.

 When the AA-P250 is used, set the CHARGE/CAMERA switch of the AA-P250 to CAMERA.
 When the AA-G10 is used, press the VTR button of the AA-G10. ω

Press the POWER switch of the unit to ON.
Now power is supplied to the unit.
• For details, read the instruction manual of the AA-G10 or AA-P250.

4-2 Battery Pack Operation

This unit can be operated with the following battery packs.

- Flat shape type battery pack ■JVC battery pack: NB-G1
- Anton-Bauer battery packPropack 13/14 SeriesTrimpack 13/14 Series
- Magnum 13/14 Series
 Compack 13/14 Series
- An additional battery holder is required. this unit directly.

An Anton-Bauer battery pack cannot be attached to

- Battery holder: Anton-Bauer model QRQ27
 See page 37 for the battery holder attaching method.
- starts to be supplied through the DC INPUT connector.

 The connection and disconnection of the DC cable should be performed quickly and correctly when operating with a battery When the DC cable is connected to the DC INPUT connector, the power supply from the battery pack is interrupted and the power
- pack. The following symptoms may occur when connecting and disconnecting the DC cable too slowly when operating with a battery
- The power is cut off for a moment when the DC cable is disconnected.
 Noise to the video and audio signals occurs. Audio signal becomes mute.
 Noise to the video and audio signals occurs. Audio signal becomes mute.
 When operation is carried out with a new battery DC input after the previously battery capacity has run out, switch OFF the power once then switch ON after the DC voltage is applied.

4. POWER SUPPLY (for U-ver.)

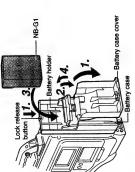
4-2 Battery Pack Operation (Cont'd)

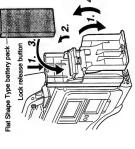
4. POWER SUPPLY (for U-ver.)

USING JVC'S NB-G1 OR FLAT SHAPE TYPE BATTERY PACK

Attaching the NB-G1 Battery Pack

Attaching a Flat Shape Type Battery Pack





- 7. Open the battery case cover while pushing the lock release button.
- $oldsymbol{2}_{oldsymbol{-}}$ Tilt the battery holder in the arrow-indicated direction.
- $oldsymbol{3}_{\star}$ insert the battery pack into the battery case with its electrodes facing the unit.
- 4. Close the battery holder in the arrow-indicated direction and close the battery case cover.

Note: Switch the power to OFF when replacing the battery pack.

Battery holder 2.1 4. Battery case cover fittery case

- T_e Open the battery case cover while pushing the lock release button.
- $oldsymbol{2_*}$ Tilt the battery holder in the arrow-indicated direction.
- $\boldsymbol{3}_{\text{a}}$ Insert the battery pack into the battery case with its electrodes facing the unit.

Mount screws (B)

downward direction.

4. Close the battery case cover.

$oldsymbol{3}_{oldsymbol{*}}$ Open the battery cover and battery holder.

Removing the Battery case from this unit and Attaching Anton-Bauer Battery Holder In Place

When an Anton-Bauer battery pack (Propack 13/14, Trimpack 13/14, Magnum 13/14, Compack 13/14 Series) is used, it is required to remove the battery case from this unit and attach the Anton-Bauer battery holder in place. Use the battery holder model described below.

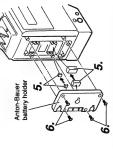
• Battery holder: Anton-Bauer model QRQ27

ATTACHING AN ANTON-BAUER BATTERY PACK

4-2 Battery Pack Operation (Cont'd)

4. Remove the 4 mount screws (B), disconnect the connectors between this unit and the battery cover, and separate the battery case from this unit.

Attaching the Anton-Bauer battery holder



1. Remove the black screw ((3) from the bottom of the battery case.
2. Remove the lower half of the battery case cover in the

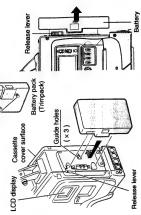
Black screw (A)

- Connect the connectors from this unit and those of the battery holder (connect 2 pairs of connectors including the large and small ones).
- **6.** Secure the battery holder onto this unit using the 4 mount screws supplied with the battery holder.
 - Be careful not to pinch the connector wires; otherwise a malfunction may result.

Mount screws (B)

USING AN ANTON-BAUER BATTERY PACK

Guide pins



I. Align the 3 guide pins of the battery pack with the guide holes on the battery holder, and push straight to insert the battery pack. The battery cannot be attached properly if the guide pins are not inserted straight.

Attaching the Battery Pack

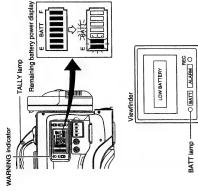
2. Slide the battery pack toward the side panel where the cassette cover is located until it clicks. → Now the battery pack has been attached.

Detaching the Battery Pack

■While pushing and holding the release lever, slide the battery pack toward the side panel where the LCD display is located, then pull the battery pack outward to remove.

4-2 Battery Pack Operation (Cont'd)

REMAINING BATTERY POWER DISPLAY



When an Anton-Bauer intelligent battery pack is used, the input voltage indicator section in the Status 1 mode of the viewfinder displays the remaining battery power in percentage

Operating Time with Battery Pack

When the VF-P116 is used as the viewfinder and a fully charged battery pack is attached, the continuous operating time is as follows:

Continuous Operating Time (at 25 °C)	40 Minutes	40 Minutes	80 Minutes	50 Minutes
Battery Pack	NB-G1	NP-1B	Magnum 14	Trimpack 14

PRECAUTIONS FOR THE BATTERY PACK

- When the battery pack is not in use, it must be stored in a cool,
 - Do not leave the battery pack in a place where it might be subject to a high temperature (under direct sunlight in a car, etc.), this could cause leakage of the fluid or shorten service life.
- When the terminal section of the battery pack gets dirty, the
- If the operating time becomes greatly reduced even immediately after recharging, the battery pack has nearly finished its service life. Purchase a new battery pack.

• To display the remaining battery power accurately, set the Setup Menu item "BATT. TYPE SELECT" according to the type of the battery pack in use. For details see page 64. The status of the remaining battery power can be checked by the remaining battery power display. For details, see page 64.

- ■When the remaining battery power is nearly exhausted, the following warning message will appear. In this case, replace it with a fully-charged battery as soon as possible.
 - Remaining battery power display:
 - Segment bar and BATT indicator starts to blink WARNING indicator and TALLY lamp blink
 - Viewfinder :
- 'LOW BATTERY" character indication (Status 0 or Status 1 BATT lamp blinks
- Alarm sound beeps mode)

After the remaining battery power warning appears, if the battery power operation is still continued, this unit automatically stops operation.

- Battery operating time may differ depending on the number of charging times of the battery, charging conditions and the
- Operating time is reduced when the powered zoom lens is used

- operating time will be shortened.

- operating environment, etc. Use the values in the table on the
 - Operating time is reduced in areas with a cold environment. left for approximate reference times.
- - **Recharging**
- recharging is repeated with incomplete discharging, this could cause lowering of the battery capacity. If the battery capacity is lowered by repeating incomplete

Recharge the battery pack after completely discharging. If

- recharging and discharging, once discharge the battery pack completely, then recharge it to regain the battery capacity.
- If the battery pack is recharged with its internal temperature raised immediately after use, recharging may not be performed completely.

POWER SUPPLY (for E-ver.)

This unit is operable with the AC power supply or battery pack

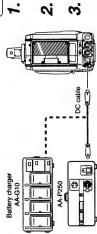
4-1 AC Operation

Do not remove or connect the DC cable while recording is being performed. Note:

Use the JVC AA-G10 battery charger (max. rated output 3.5A, 12. V DC) or AA-P250 battery charger (max. rated output 3.5A, 12.5 V DC) as the AC power supply.

· Do not use any power source with large fluctuations in the

power source voltage as with ripples or other noise



1 After making sure that the power switches of the DY-90 and collection of AA-P20 are set to OFF, connect the DC coelle from the AA-G10 or AA-P20s to the DC INPUT connector of the DY-90 as shown in the illustration. 2. • When the AA-P250 is used, set the CHARGE/CAMERA switch to CAMERA.

When the AA-G10 is used, press the VTR button.

Press the POWER switch of the unit to ON. Now power is supplied to the unit.

 For details, read the instruction manual of the AA-G10 or AA-P250.

4-2 Battery Pack Operation

This unit can be operated with the following battery packs.

 Propack 13/14 Series
 Trimpack 13/14 Series Anton-Bauer battery pack

■Flat shape type battery pack

 Magnum 13/14 Series
 Compack 13/14 Series ■JVC battery pack: NB-G1

When the NB-G1 or a flat type battery pack is used, the optional battery case BH-P27 must be mounted to this unit. For details see page 36.

Directly connect to the battery holder.

starts to be supplied through the DC INPUT connector.

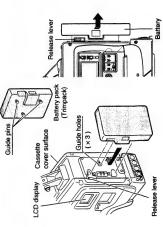
• The connection and disconnection of the DC cable should be performed quickly and correctly when operating with a battery When the DC cable is connected to the DC INPUT connector, the power supply from the battery pack is interrupted and the power

pack. The following symptoms may occur when connecting and disconnecting the DC cable too slowly when operating with a battery

The power is cut off for a moment when the DC cable is disconnected.

Noise to the video and audio signals occurs. Audio signal becomes mute.
 When operation is carried out with a new battery DC input after the previously battery capacity has run out, switch OFF the power once then switch ON after the DC voltage is applied.

USING AN ANTON-BAUER BATTERY PACK



Attaching the Battery Pack

 $oldsymbol{I}_{oldsymbol{a}}$ Align the 3 guide pins of the battery pack with the guide holes on The battery cannot be attached properly if the guide pins are not the battery holder, and push straight to insert the battery pack. inserted straight 2. Slide the battery pack toward the side panel where the Now the battery pack has been attached. cassette cover is located until it clicks.

Detaching the Battery Pack

■While pushing and holding the release lever, slide the battery pack toward the side panel where the LCD display is located, then pull the battery pack outward to remove.

E-37

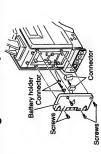
4. POWER SUPPLY (for E-ver.)

4-2 Battery Pack Operation (Cont'd)

USING JVC's NB-G1 OR FLAT TYPE BATTERY PACK

When JVC's NB-G1 battery pack or flat type battery pack is used, it is required to remove the battery holder of the DV-90 and the optional battery case (BH-P27) must be mounted.

Removing the Battery Holder and Attaching the BH-P27 Battery Case (optional)



T. Remove the four screws fixing the battery holder and the two connectors (large, small) retaining the battery holder to this unit to remove the battery holder.

 $oldsymbol{3}$. Open the battery case cover and the battery retaining holder. 4. Connect the battery case connector to the large connector $oldsymbol{5}_{oldsymbol{s}}$. Using the four fixing screws provided with the battery case,

5. Mount screws

Attaching the BH-P27 battery case



2. Remove the black screw A on the bottom of the the lower half of the battery case cover in the downward direction. battery case, and remove

Secure the lower cover removed in step 2, using the black

screw (A).

6

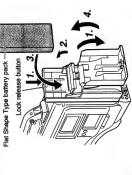
mount the battery case to this unit.

of this unit.

Attaching a Flat Shape Type Battery Pack

Attaching the NB-G1 Battery Pack

Black screw A



NB-G1

_ Open the battery case cover while pushing the lock release

 $oldsymbol{2}$. Tilt the battery holder in the arrow-indicated direction.

 $oldsymbol{3}$. Insert the battery pack into the battery case with its electrodes facing the unit.

 $oldsymbol{3}_{oldsymbol{ in}}$ Insert the battery pack into the battery case with its electrodes

facing the unit.

 $oldsymbol{2}_{oldsymbol{ in}}$ Tilt the battery holder in the arrow-indicated direction.

T. Open the battery case cover while pushing the lock release

Battery case cover

Close the battery holder in the arrow-indicated direction and

close the battery case cover.

4

4. Close the battery case cover.

4. POWER SUPPLY (for E-ver.)

4-2 Battery Pack Operation (Cont'd)

REMAINING BATTERY POWER DISPLAY

Remaining battery power display 紫 PEC | NETT | ALARM | O TALLY lamp LOW BATTERY WARNING indicator

When an Anton-Bauer intelligent battery pack is used, the input voltage indicator section in the Status 1 mode of the viewfinder displays the remaining battery power in percentage (%) figures.

BATT lamp -

The status of the remaining battery power can be checked by the • To display the remaining battery power accurately, set the Setup Menu item "BATT. TYPE SELECT" according to the type of the battery pack in use. For details see page 64.

remaining battery power display. For details, see page 64.

When the remaining battery power is nearly exhausted, the following warning message will appear. In this case, replace it with a fully-charged battery as soon as possible. Remaining battery power display:

Segment bar and BATT indicator starts to blink WARNING indicator and TALLY lamp blink

"LOW BATTERY" character indication (Status 0 or Status 1 BATT lamp blinks

Alarm sound beeps

After the remaining battery power warning appears, if the battery power operation is still continued, this unit automatically stops operation.

Operating Time with Battery Pack

When the VF-P116 is used as the viewfinder and a fully charged battery pack is attached, the continuous operating time is as follows:

Battery operating time may differ depending on the number of

Continuous Operating Time (at 25 °C)	80 Minutes	50 Minutes	40 Minutes	40 Minutes	
Battery Pack	Magnum 14	Trimpack 14	NB-G1	NP-18	

PRECAUTIONS FOR THE BATTERY PACK

 When the battery pack is not in use, it must be stored in a cool, dry place. Do not leave the battery pack in a place where it might be subject

to a high temperature (under direct sunlight in a car, etc.), this could cause leakage of the fluid or shorten service life.

 When the terminal section of the battery pack gets dirty, the operating time will be shortened.

after recharging, the battery pack has nearly finished its service life. Purchase a new battery pack. If the operating time becomes greatly reduced even immediately

charging times of the battery, charging conditions and the operating environment, etc. Use the values in the table on the left for approximate reference times. Operating time is reduced when the powered zoom lens is used Operating time is reduced in areas with a cold environment.

Recharging

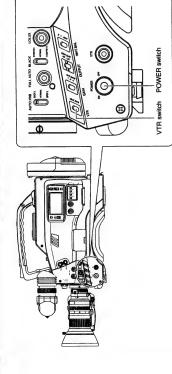
Recharge the battery pack after completely discharging. If recharging is repeated with incomplete discharging, this could cause lowering of the battery capacity.

recharging and discharging, once discharge the battery pack completely, then recharge it to regain the battery capacity. If the battery capacity is lowered by repeating incomplete

 If the battery pack is recharged with its internal temperature raised immediately after use, recharging may not be performed completely.

5. PREPARATIONS

5-1 Turning the Power ON

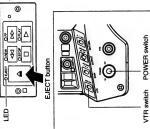


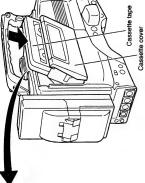
- Turn the POWER switch to ON.
- The power is then supplied to the unit.
- Video image is output to the viewfinder.
- The display of the VCR section is turned on.
- The DY-90 operation mode may differ when the power is turned ON or when the cassette is loaded depending on the setting of the VTR switch as follows: $oldsymbol{2}_{oldsymbol{*}}$ Select the DY-90 operation mode with the VTR switch.

VTR switch setting	DY-90 operation mode
SAVE	DY-90 enters the SAVE mode (tape protect mode) and
	stops the drum motor. "SAVE" is displayed in the VCR
	operation display section in the Status 1 mode of the
	viewfinder. In this mode, the tape is effectively protect-
	9d.
	In this condition, press the VTR trigger button to start
	recording. However, the time required for this operation
	takes more than for that of the STBY mode.
STBY	When a recordable cassette tape is loaded, the DY-90
	enters the record-pause mode automatically. (the Drum
	motor is still rotating.)
	"STBY" is displayed on the Status 1 screen on the
	viewfinder.
	In this condition, pressing the VTR trigger button
	polipropor obroto plateline

5. PREPARATIONS

5-2 Cassette Loading and Unloading 0 Outer Orew OF EJECT button **4** LED -





- A cassette cannot be loaded in or unloaded from the unit while it is in POWER OFF mode.
 Use a video cassette tape marked DIGITAL S.
 A S-VHS or VHS video cassette in the unit, it will be ejected automatically

Loading the Cassette

- Turn the POWER switch to ON.
- 2. Press the EJECT button to open the cassette cover. The LED indicator above the EJECT button lights and the cassette cover opens.
- $oldsymbol{3}$, insert a cassette tape after removing the tape slack.
- The tape is loaded automatically when the cassette cover is 4. Slowly close the cassette cover by pushing it in all the way.
- during tape loading and lights steadily after the The cassette indicator on the display blinks
- The condition at the completion of loading is variable depending on the VTR switch and the REC switch on the back side of the cassette tape as shown below. loading has been completed.
- The unit enters stop REC switch of Cassette Tape Ŗ In the record-pause mode the drum rotation Enters record-pause mode after back-8 spacing. VTR switch VTR STBY SAVE
- After the cassette cover is closed, it takes about 8 seconds before the unit can start recording or enter the stop mode.

is stopped.

CAUTION

no operation. In this case, push the cover again all the way to get it locked firmly. When the cassette is in place and the cassette cover is own braff-locked, the local cassette indicator in the LCD display will not appear. When the cassette cover is properly locked, the indicator is displayed. way. When the cassette cover is not closed completely, it is left in a half-locked state, in which the VCR section accepts When closing the cassette cover, be sure to push it in all the

Unloading the Cassette

- 1. Turn the POWER switch to ON.
- \pmb{Z}_{r} Press the EJECT button. \longrightarrow The LED indicator above the EJECT button lights and tape ejection starts.
 - The cassette indicator on the display blinks during tape ejection and turns off after the
 - ejection has been completed.
- It takes a few seconds before the cassette cover opens after the EJECT button is pressed.
- The cassette tape cannot be ejected during recording. Al-low the unit to enter the record-pause mode first before press-ing the EJECT button.
- 3. Take out the cassette tape.
- 4. Close the cassette cover.

CAUTION

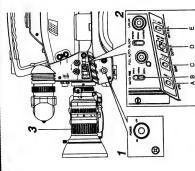
Do not leave the unit for a long period with the cassette cover

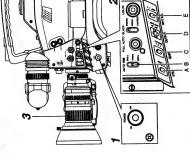
open. Otherwise dirt or other foreign objects may enter the VCR section, and cause malfunction.

33

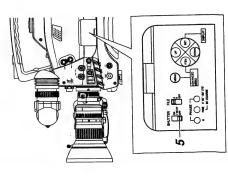
SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-1 Camera Control Settings for Adjustment









. POWER ON

- First place a charged battery in the battery holder or connect DC power to the DC input.
 - 2. Turn the AC power adapter on.

3. Set the POWER switch on the unit to ON.

2. Side SWITCH positions

- A. Turn the VTR switch to the SAVE.
- B. AUTO IRIS switch; set to NORMAL. C. GAIN switch; set to L. The L position is always 0 dB. D. OUTPUT (CAMBARS) switch; set to CAMAUTO KNEE
- E. WHT. BAL (Auto White Balance) switch; set to A or B.

3. AUTO IRIS ON

Initially set the lens iris to Automatic. (A mode)
Later take advantage of the Momentary Iris control to activate the camera's exposure system when needed.

4. FILTER turnet

Choose the proper Filter selection for the lighting conditions.

Suitable Location	Indoor, dark outdoors	Outdoors	Outdoor under fine weather	The cross effect filter makes the	highlight sections shine like cross-	es and reduces the contrast. The	corresponding color temperature is	3200K.
FILTER	3200K	5600K	5600K+ND	EFFECT				
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	FILTER	Suitable Location
-	3200K	Indoor, dark outdoors
2	5600K+1/4ND	2 5600K+1/4ND Outdoors under fine weather
3	3 5600K	Outdoors
4	5600K+1/16ND	5600K+1/16ND Outdoor under fine weather

5. SHUTTER positions Set to OFF position.

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-2 Viewfinder Adjustment



Visibility adjustment

Rotate the eyepiece focusing ring so that the viewfinder screen image is clearly visible.

Brightness and contrast adjustment

When the ambient brightness changes, the brightness and contrast of the viewfinder screen can be adjusted with the CONT and BRIGHT controls.

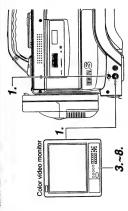
Peaking adjustment

Turning the PEAKING (contour adjustment) control makes the picture look sharper, making focus adjustment easier.

6-3 External Monitor Adjustment (U-ver.)

BRIGHT

PEAKING CONT



 $oldsymbol{2}_{oldsymbol{-}}$ Set the OUTPUT switch to BARS to output the color bar signal

(SMPTE type color bars).

T_ Connect a color video monitor to the MONITOR OUTPUT connector of the camera head. Set the switch to the CAM

side of the [CAM/VTR] switch of this unit.

Display the color bar signal built in the camera head and adjust

the colors, contrast and brightness.

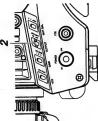
8.	の語画	81-
-;-		
	.8°	

4. Adjust the chroma control of the monitor so that there is no difference in brightness between ① and ⑧ or between ③ and ⑩ of the color bars.

 $oldsymbol{3}$. Set the monitor so that the screen turns entirely blue.

 ${\bf 5}$. Adjust the phase control of the monitor so that there is no difference in brightness between (§) and (§) or between (§)

and (2) of the color bars.



5. If the phase control adjustment above causes a difference in brightness between 0 and 0 or between 0 and 0, restart from the chroma control adjustment in step 4. 7. Switch the monitor back to the standard screen (All of R, G Adjust the brightness by using the Brightness Adjusting control so that the color bar (® and (® disappear, and color control).

and B will appear).

bar 20 becomes visible

o color bare

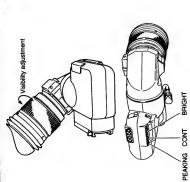
eula 🕞	White	Blue
рөн⊚	Black	8
RegaM (Regard	Cyan (3)	
Green	Black	a a a a
⊚ Cyan	Magenta (10	Blue
wolleY 🕙	⊕ Black	\vdash
esirtw 🕒	e Blue	Blue

■ SMPTE type color bars

eula 🕞	White	Blue
pe∃ ⊚	Black (3)	®
stnegsM @	Cyan (13)	
Green	Black	Blue (C)
⊕ Cyan	Magenta (10)	Blue
wolley 🐷	⊕ Black	\vdash
etinw 😑	Blue	Blue

The color bar screen has a configuration as shown above. The description hereinafter refers to the positions in the color bar screen using the numbers.

U-42



■ Visibility adjustment

Rotate the eyepiece focusing ring so that the viewfinder screen image is clearly visible.

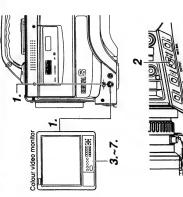
Brightness and contrast adjustment

When the ambient brightness changes, the brightness and contrast of the viewfinder screen can be adjusted with the CONT and BRIGHT controls.

Peaking adjustment

Turning the PEAKING (contour adjustment) control makes the picture look sharper, making focus adjustment easier.

6-3 External Monitor Adjustment (E-ver.)



EBU type colour bars

 Вівск	©
 eula	(P)
 реЯ	©
Magenta	©
Green	•
Cyan	<u>@</u>
 Yellow	(9)
 White	Θ

The colour bar screen has a configuration as shown above. The description hereinafter refers to the positions in the colour bar screen using the numbers.

Display the colour bar signal built in the camera head and adjust the colours, contrast and brightness I Connect a colour video monitor to the MONITOR OUTPUT connector of the camera head. Set the switch to the CAM side of the [CAM/VTR] switch of this unit.

Make sure that the monitor is terminated with 75 Ω before connecting the MONITOR OUTPUT connector. If it is not terminated with 75 Ω the video signal will not output when the power is on because of the power saving features equipped with this unit.

 $oldsymbol{2}$. Set the OUTPUT switch to COLOUR BARS to output the colour bar signal (EBU type colour bars).

3. Set the monitor so that the screen turns entirely blue.

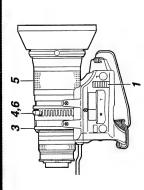
4. Adjust the chroma control of the monitor so that there is no difference in brightness between (1) and (2) of the colour bars. 5. Adjust the phase control of the monitor so that there is no difference in brightness between (3) and (6) of the colour bars.

i(O æ

6. If the phase control adjustment above causes a difference in brightness between $\widehat{(\!\! 1\!\!)}$ and $\widehat{(\!\! 0\!\!)}$, restart from the chroma control adjustment in step $\pmb{4\!\! 4\!\! /}$ **7.** Switch the monitor back to the standard screen (All of R, G and B will appear).

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-4 Back Focus Adjustment



Adjust the viewfinder for sharpness first. It is easier to adjust back focus when the subject is more than 3 2. Set the Zoom mode to MANU (Manual). Set the Iris mode to M (Manual). lens is attached for the first time. meters from the subject.

It is only necessary to perform this when focusing is not correct in both the Telephoto and Wide-angle positions, such as when the

3. Open the Iris ring to F1.4. If the illumination is too strong, reduce it or move to a darker place. 5. Focus on the subject. There is a specific chart that looks like a dart board which is helpful.

 $oldsymbol{4}_{oldsymbol{ iny}}$ Turn the zoom lever until the lens is completely telephoto.

6. Set the lens to completely Wide-angle.

7. Loosen the back focus ring retaining knob.

mmmmm.

 $oldsymbol{8}$. Adjust the back focus ring for the best possible focus.

7,8,10

 $oldsymbol{g}_{oldsymbol{s}}$ Repeat steps 4 through 8 for fine adjustment.

 ${\it 10.}$ Tighten the back focus ring retaining knob to secure the



E41

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SETTING AND ADJUSTMENTS BEFORE SHOOTING

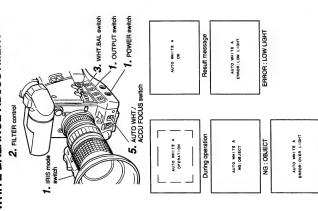
6-5 White Balance Adjustment

Since the color of light (color temperature) is variable depending on the light source, it is required to re-adjust the while balance when he main light source illuminating the object changes.

• Do not place any objects such as metal one, etc. that can produce a strong reflected light as this may cause an improper white - Note

When an object lit by a halogen lamp of which the color temperature is 3,200K is shot while using a the color temperature
conversion filter set to 5,600K, a proper white balance adjustment and (FAW) Full Time Auto White balance cannot be carried
out, in this case, change the setting of the color temperature conversion filter to 3,200K then carry out the white balance adjustment and (FAW) again.

WHITE BALANCE ADJUSTMENT



Two kinds of white balance adjustment results can be stored in memories A and B.

Adjustment procedure

- Set the following switches.
 Set the POWER switch to ON.
 Set the OUTPUT switch to CAM-AUTO KNEE OFF.
 Set the OUTPUT switch of the lens to A (Auto).
- Set the FILTER control according to the current lighting.
- Set the WHT.BAL switch to A or B.
- Place a white object near the center of the screen under the same lighting conditions as the target object and zoom in to fill the screen with white.
- Tilt the AUTO WHT./ACCU FOCUS switch upward (to AUTO WHITE) once and release it.

 • "AUTO WHITE A, B OPERATION" is displayed on the Ċ,
 - viewfinder screen during the operation of the auto white
- "AUTO WHITE A, B OK" is displayed when the white balance balance adjustment circuit.

has been adjusted properly.

Error messages]

- Displayed when there is not enough white color on an object or the color temperature is not suitable. NG: OBJECT
- Displayed when the light is low. Increase the lighting illuminationthen re-adjust the white balance. ERROR: LOW LIGHT
 - ERROR: OVER LIGHT
 - Displayed when the light is excessively bright. Decrease the ighting illumination then re-adjust the white balance

FULL-TIME AUTO WHITE BALANCE (FAW)

ERROR: OVER LIGHT

The FAW function adjusts the white balance value automatically

as the lighting condition changes.
This mode is convenient when you have no time to adjust the white balance or when the camera is moved frequently in and out of places under different lighting conditions

Setting procedure

This item allows setting of the FAW function to one of the white balance switches, A, B or PRESET. Select "NONE" if the FAW function is not required. The FAW function can be activated with item "FAW" on the ADVANCED MENU.

See page 69.

provide optimum white balance with an object outside the The FAW (Full-time Auto White balance) function cannot CAUTION:

FAW adjustment range, for example when it contains only a

single color or not enough white color.

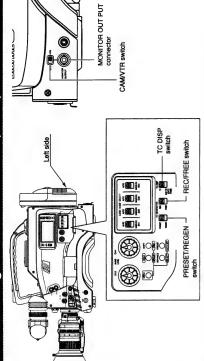
The accuracy of the FAW (Full-time Auto White balance) is inferior to that of the manual white balance.

 When the power is switched ON in the FAW mode, it will take approximately 10 seconds for the FAW to complete automatic adjustment.

Do not perform any recording during these few seconds.

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-6 Switch Settings of the VCR Section (U-ver.)



The DY-90 records 4 channels of audio signals to the PCM au-PCM Audio recording channel

According to the audio input connectors (DA1 - DA4 IN), it records to each PCM audio channel (DA1 - DA4). See page 46.

Select with the [LINE/MIC] switch for the audio input when recording the audio signal of the [DA1 IN] or [DA3 IN] connec-Audio input signal selection

Select the recording level adjustment "AUTO" or "MANUAL" for each audio input connector separately. (See page 47.) Recording level adjustment selection

tors on the rear panel. See page 46.

■ Video output signal selection

Select the video signals from the viewfinder and monitor connector with the [CAM/VTR] switch. : Regardless of which mode, the EE image from the

Set to this position to shoot the image for back up use with the VCR connecting to the MONITOR OUTPUT camera video signal is output.

: The playback picture is output during the playback E

The EE image from the camera is output during other modes except PLAY mode. Set it to this position for ordinary use

VCR setup menu setting

Select whether the lower frequency components of the audio signal is attenuated or not for each audio input signal. Set to "ON" when eliminating the wind noise of the micro-AUDIO LOW CUT SELECT (DA1 TO DA4)

Select the time (in minutes) until the DY-90 enters the tape protection mode (drum rotation stops) when the recordpause mode is continued for long time. LONG PAUSE TIME SELECT

Select an image to be viewed in the viewfinder or monitor during backspacing in the Record-pause mode. (Effective only when the [CAM/VTR] switch is set to "VTR".) BACK SPACE MODE SELECT

For details of setup menu, see page 64.

Setting the time code recording function

The unit records SMPTE-standard time code during recording. Set the switches in the TC GENERATOR block according to applications.

To record a time code as set in the built-in time code generator:

Set the PRESET/REGEN switch to PRESET.

Set the REC/FREE switch.

If it is required to record continual time codes across different scenes, set the switch to REC.

Set the VCR setup menu.

and set the framing mode of the time code generator to Open the setup item "TCG SELECT DROP/NON-DROP" drop frame or non-drop frame mode.

 To record a time code in continuation from the existing time Set the PRESET/REGEN switch to REGEN When recording the time code slave-locked to the external time code generator.

Set the PRESET/REGEN switch to PRESET.
Set the REC/FREE switch to FREE.
Setting the "U-BIT SLAVE ON/OFF" switch in the setup

menu mode: Set to ON when the user's bit is also slave locked at the same time.

The time taken to enter record mode from record-pause mode is variable depending on the PRESET/REGEN switch position

When set to PRESET : Approx. 0.8 second When set to REGEN : Approx. 1.5 second

This switching will causes a shift in the tape position for the When the PRESET/REGEN switch is switched after having started recording by pressing the VTR trigger button of the REC PAUSE. Therefore, the unit generates a switching sound camera, the new setting remains valid in subsequent record ing operations. For details on the time code operations including time code presetting, see "TIME CODE OPERATION" on page 55.

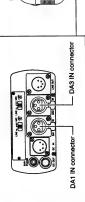
The sub-time code is used to record the date and

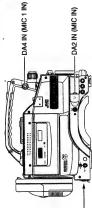
For the setting of the date and time data, see page 61.

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6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-7 PCM audio recording channels for audio input signals (U-ver.)



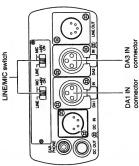


The DY-90 is equipped with 4 audio input connectors (DA1 IN - DA4 IN) to record 4 channels of audio signals. As shown in the list below, the signals from each of the audio input connectors (DA1 IN - DA4 IN) are respectively recorded on each of the PCM audio channels (DA1 - DA4) of the tape.

	DA4	DA4 IN (MIC 1 IN) Connector
PCM Audio Recording Channel	DA3	DA3 IN Connector
PCM Audio Rec	DA2	DA2 IN (MIC IN) Connector
	DA1	DA1 IN Connector

- The sound on the DA1/DA2 or DA3/DA4 channels is output during playback.(can be selected with the AUDIO MONITOR
- The audio signals of the DA1 IN and DA2 IN connectors are only recorded on the linear track of the tape for audio search.

When the tape is in playback with the BR-D80U, BR-D40U or BR-D750U series, etc. which are not compatible with 4-channel audio signal output, the sound of the DA1 and DA2 channels only are output. - Note:



Select the audio signal input to the AUDIO INPUT connector using the LINE/MIC switch. Set for DA1 IN and DA3 IN con-

equipment, etc. The reference input level is +4 dBs.

The reference input level is -60 dBs.

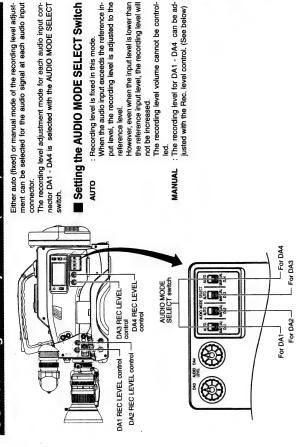
Connect a monaural microphone to the DA4 (MIC 1) IN con-

channel only is recorded.

MV-P612 (Stereo/Monaural): Set the microphone mode

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-9 Recording Level Adjustment (U-ver.)



When the audio input exceeds the reference in-put level, the recording level is adjusted to the

: Recording level is fixed in this mode.

However, even when the input level is lower than

reference level.

the reference input level, the recording level will The recording level volume cannot be control-

not be increased.

can be ad-

: The recording level for DA1 - DA4 can be adjusted with the Rec. level control. (See below)

MANUAL

■ Manual Recording Level Adjustment

Recording level can be adjusted manually when the DY-90 is in the record, record-pause or stop mode.

I. Set the AUDIO MODE SELECT switch to "MANUAL" according to the input signal to be manually adjusted.

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AUDIO MONITOR -switch

O

- Select the audio level meter display mode for the display and viewfinder (DA1/DA2 or DA3/DA4 indication) using the AUDIO MONITOR switch. S
- Rotate the Rec level control corresponding to the required audio input. to be adjusted.

 • Adjust so that the peak level does not exceed the -3dB point e,

Viewfinder Status 1 mode

- With microphone input, since the limiter circuit is activated, when the loud sound is input.
- the recording level does not exceed 0 dB even if the Reclevel control is turned up.

phone is not connected, increasing the recording level could cause the noise from the input connector to be recorded on the tape. When the microphone is not connected to the DA1 panel is set to "MIC", be sure to check that the microphone is connected to the DA1 or DA3 INPUT connector. If the microor DA3 INPUT connector on the rear panel, set the LINE/MIC When the DA1 or DA3 INPUT LINE/MIC switch on the rear switch to "LINE" or lower the Rec level control.

Audio level
 Upper: DA1 or DA3
 Lower: DA2 or DA4

12.4V

-60-54

Indication level (reference)

6-8 Audio Input Signal Selection (U-ver.)

DA1 IN connector

Selection of Rear Audio Input Connectors

nectors separately. 뽕

: Set to this position when connected to audio

Set to this position when using the monaural microphone.

S

+48 V DC power supply is connected. (Such as JVC MV-P615.) Set to this position when a microphone requiring MIC +48 V

■ DA4 (MIC 1) IN Connector

nector.

When a stereo microphone is connected, the sound on the L

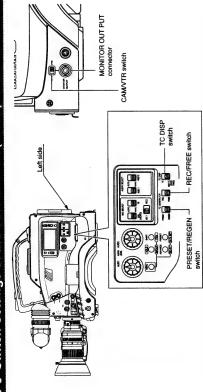
Compatible JVC microphones are: MV-P616 (Monaural) switch to "Monaural"

0-46

E-45

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-6 Switch Settings of the VCR Section (E-ver.)



Audio input signal selection

Select the audio signal for the microphone connector on the front panel or the AUDIO INPUT connector on the rear panel with the AUDIO SELECT switches. (See : page 45.) PCM audio channel distribution for audio input signal Confirm the channel distribution of the audio input signal onto the four PCM audio channels (DA1 - DA4). (See page 46.)

Recording level adjustment selection

Select the recording level adjustment "AUTO" or "MANUAL" for each audio input connector separately. (See page 47.)

Video output signal selection

Select the video signals from the viewfinder and monitor connector with the [CAM/VTR] switch.

CAM : Regardless of which mode, the EE image from the : Regardless of which mode, the EE image from the

Set to this position to shoot the image for back up use with the VCR connecting to the MONITOR OUTPUT camera video signal is output.

The playback picture is output during the playback Z

connector.

The EE image from the camera is output during other modes except PLAY mode. Set it to this position for ordinary use.

VCR setup menu setting

Select whether the lower frequency components of the audio Set to this position when eliminating the wind noise of the signal is attenuated or not for each audio input signal. AUDIO LOW CUT FRONT/AUDIO LOW CUT REAR

LONG PAUSE TIME SELECT

Select the time (in minutes) until the DY-90 enters the tape protection mode (drum rotation stops) when the recordpause mode is continued for long time. BACK SPACE MODE SELECT

Select an image to be viewed in the viewfinder or monitor

during backspacing in the Record-pause mode. (Effective

only when the [CAM/VTR] switch is set to "VTR".)

For details of setup menu, see page 64.

Setting the time code recording function

The unit records EBU-standard time code during recording. Set the switches in the TC GENERATOR block according to applications.

To record a time code as set in the built-in time code generator:

Set the PRESET/REGEN switch to PRESET.
 Set the REC/FREE switch.

If it is required to record continual time codes across different scenes, set the switch to REC.

 To record a time code in continuation from the existing time code on tape:

Set the PRESET/REGEN switch to REGEN.

When recording the time code slave-locked to the external

time code generator.

 Set the PRESET/REGEN switch to PRESET.
 Set the REC/FREE switch to FREE.
 Setting the "U-BIT SAVE ON/OFF" switch in the setup menu mode: Set to ON when the user's bit is also slavenaru mode: Set to ON when the user's bit is also slave. locked at the same time

The time taken to enter record mode from record-pause mode is variable depending on the PRESET/REGEN switch position. When set to PRESET : Approx. 0.8 second

: Approx. 1.5 second

When set to REGEN

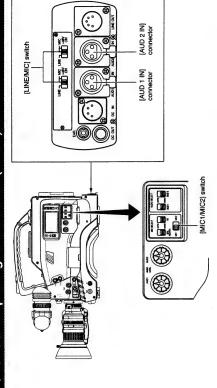
This switching will causes a shift in the tape position for the REC PAUSE. Therefore, the unit generates a switching sound. When the PRESET/REGEN switch is switched after having started recording by pressing the VTR trigger button of the camera, the new setting remains valid in subsequent recording operations. For details on the time code operations including time code presetting, see "TIME CODE OPERATION" on page 55.

■ The sub-time code is used to record the date and time data.

For the setting of the date and time data, see page 61.

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-7 Audio Input Signal Selection (E-ver.)



Selection of Front Microphone Connector

 Select the audio signal input among MIC 1 and MIC 2 connectors on the front panel using the [MIC1/MIC2] switch. MIC 1: Inputs the audio signal from the microphone connected to the MIC 1 connector.

MIC 2: Input the audio signal from the microphone connected to MIC 2 connector.

Set the [FRONT MIC1 SELECT] of the SETUP MENU according to the microphone type (monaural or stereo) to When the microphone of the MIC1 connector is used: be connected. (See page 62)

FRONT MIC 1 SELECT

no : Set to this position when using a monaural microphone.

st : Set to this position when using a stereo microphone. * There is no need to set this menu switch when connecting

a microphone to the MIC2 connector.

Select the audio signal input to the AUDIO INPUT connector using the [LINE/MIC] switch. Set for AUD-1 and AUD-2 connectors separately.

LINE : Set to this position when connected to audio LINE equipment, etc.

Selection of Rear Audio Input Connectors

The reference input level is -60 dBs. Set to this position when a microphone requiring +48 V DC power supply is connected. (Such as JVC MV-P615.) MIC +48 V

: Set to this position when using the monaural

microphone.

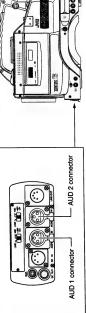
읓

The reference input level is +4 dBs.

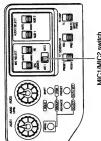
Refer to page 46 for the Allocation of Audio Input signals Recorded onto the PCM Audio Channel.

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-8 PCM Audio Channel Allocation of Audio Input Signal (E-ver.)







A total of four input connectors are provided for audio input.

To which PCM audio channel (DA1 to DA4) the audio signal to be recorded depends on the type of camera microphone connected to the MIC1 or MIC2 connectors which are on the front panel of the camera. Refer to the settings on the list below

Set the [MIC1/MIC2] switch and [FRONT MIC1 SELECT] on the VCR SETUP MENU according to the type of camera microphone to be connected. Refer to page 64 on the VCR SETUP MENU.

Allocation of Audio Input Signals Recorded onto PCM Audio Channels

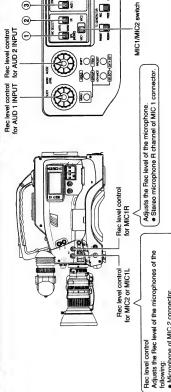
Microphone connector to be	Setting	gui		PCM Audio channel	o channel	
used and microphone type	[MIC1/MIC2] switch	Menu	DA1	DA2	DA3	DA4
MIC 1 connector (6 Pin) Monaural microphone (MV-P616, etc.)	MIC 1	(MONO)	AUD1	MIC1	AUD2	AUD2
MIC 1 connector (6 Pin) Stereo microphone (PV-P612, etc.)	MIC 1	St (STEREO)	AUD1	AUD2	MIC1L	MIC1R
MIC 2 connector (XLR, 3 Pin) Monaural microphone (PV-P615, etc.)	MIC 2	Not provided	AUD1	MIC2	AUD2	AUD2

- During playback the audio signal of the DA1/DA2 or the DA3/DA4 channel is output. The audio signals on the DA1 and DA2 channels are always recorded on the linear track of tape for audio search

When the tape is in playback with a VCR (BR-D80E, BR-D40E or BR-D750E series, etc.) which is not compatible with 4 channel audio signal output, the sound of DA1 and DA2 only are output.

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-9 Recording Level Adjustment (E-ver.)



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Select whether the recording level adjustment is set to Auto mode Microphone of MIC 2 connector.
 Monaural microphone of MIC 1 connector.
 Stereo microphone L channel of MIC 1 connector.

or Manual mode for each audio input connector using the AUTO/ MANUAL select switches. : Recording level is fixed. In this mode When set to AUTO

 When set to MANUAL: Recording level can be adjusted using the Rec level controls for each audio the Rec level control does not function.

Manual Recording Level Adjustment

■ Recording level AUTO/MANUAL select switch

 Select switch for MIC2 or MIC1L
 This function is available to the following microphones.
 Microphone of MIC2 connector.
 Monaural microphone of MIC1 connector.

Stereo microphone L channel of MIC1 connector.

② Select switch for MIC1R This function is available to the R-channel of the microphone of MIC1 connector.

Select switch for AUD 1 INPUT
 Select switch for AUD 2 INPUT

Recording level can be adjusted manually when the DY-90 is in the record, record-pause or stop mode.

Set the AUTO/MANUAL switch to "MANUAL" according to the input signal to be manually adjusted. **2.** Select the audio level meter display mode for the display and viewfinder (DA1/DA2 or DA3/DA4 indication) using the AUDIO DISPLAY switch. 3. Rotate the Rec level control corresponding to the required audio input. to be adjusted.

Adjust so that the peak level does not exceed the -3dB point

when the loud sound is input.

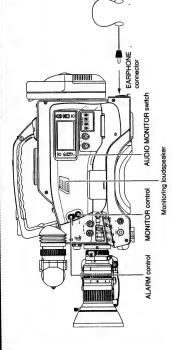
• With microphone input, since the limiter circuit is activated, if the recording level does not exceed 0 dB even if the Reclevel control is turned up.

is set to "MIC", be sure to check that the microphone is connected to the AUDIO INPUT connector. If the microphone When the AUDIO INPUT LINE/MIC switch on the rear panel the noise from the input connector to be recorded on the tape. When the microphone is not connected to the AUDIO INPUT is not connected, increasing the recording level could cause connector on the rear panel, set the LINE/MIC switch to "LINE" or lower the Rec level control.

- Audio level Upper : DA1 or DA3 Lower : DA2 or DA4 |--|--|--|--|--|--|+|---|--|--| 12.47 Viewfinder Status 1 mode Indication level (reference) F5.6 STBY [AUDIO DISPLAY] -switch

6. SETTING AND ADJUSTMENTS BEFORE SHOOTING

6-10 Monitoring Audio During Recording

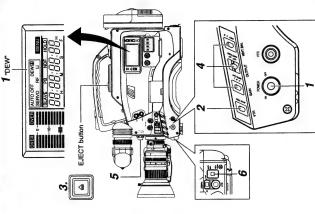


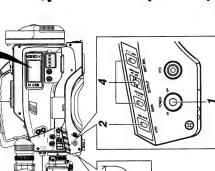
The audio input during recording, record-pause or stop mode can be monitored through the monitoring loudspeaker or earphone.

- The monitoring audio is not output from the loudspeaker while
- · Select the PCM audio channel to be monitored using the the EARPHONE jack is in use
- **DA1/DA2**: Outputs the audio signal input to the DA1 and DA2 PCM audio channels. AUDIO MONITOR switch.
- DA3/DA4: Outputs the audio signal input to the DA3 and
 - DA4 PCM audio channels.
- The MONITOR control adjusts the monitoring volume.
 The loudspeaker or earphone outputs an alarm tone in the An alarm tone is also output when the tape end is reached or case of an abnormal condition occurring with the VCR sec
 - when the battery is running down. The alarm tone volume can be adjusted with the ALARM control. For details on the Do not increase the audio monitoring volume too high, otherwise howling with the camera microphone may occur. alarm tone, see pages 81 and 82.

7. SHOOTING OPERATION

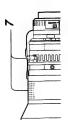
7-1 Basic Recording Operation











Power is then supplied to the unit. Turn the POWER switch to ON.

Check that the condensation display "DEW" does not appear on the display. If it is lit, wait until the indicator goes out.

 $oldsymbol{2}_{oldsymbol{ iny}}$ Set the VTR switch to the STBY position.

pressing the VTR trigger button will start recording. However in this case, it is necessary to wait for a short Even when the VTR switch is set to the "SAVE" position, time until the recording actually starts. For SAVE mode, see page 51. $oldsymbol{3}$. Press the EJECT button to open the cassette cover, insert a cassette tape properly and close the cassette cover gently.

• Ensure that the REC switch on the back side of the cassette is set to ON. When the cassette cover is closed, the tape is loaded and

 Use a cassette tape marked DIGITAL S. An S-VHS or a the unit enters record-pause mode

 After the cassette cover is closed, it takes about 10. seconds before the unit is ready for recording. VHS cassette cannot be used with this VCR.

4. Set the switches as required.
OUTPUT: "CAM/UTO KNEE OFF" WHT-BAL: "A" or "B"

: Sensitivity suitable for the subject Set the IRIS switch of lens to "A". GAIN

 $oldsymbol{5}$. Select the FILTER according to the lighting condition.

: For shooting indoors or Position 1 (3200K) U-ver.

: For shooting outdoors on a : For shooting outdoors is not sufficient Position 2 (5600K) Position 3 (5600K + 1/16ND)

sunny day. The cross effect filter makes the highlight sec-Position 4 (EFECT)

tions shine like crosses and reduces the contrast. The corresponding color temperature is 3200K.

is not sufficient Position 1 (3200K) • E-ver.

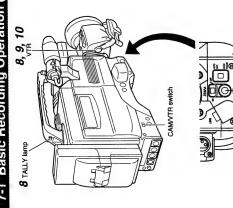
: For shooting indoors or outdoors when illumination : For shooting outdoors on a : For shooting outdoors on a : For shooting outdoors Position 4 (5600K + 1/16ND) Position 2 (5600K + 1/4ND) Position 3 (5600K)

6. Adjust the white balance. (See page 44 for U-ver.43 for E-ver..)

7. Point the camera at the subject and determine the angle of view and focus with the zoom lever and the focusing ring.

49

7-1 Basic Recording Operation (Cont'd)



8. Press the VTR trigger on the unit or lens to start recording. Once recording has started, the tally lamps on the VCR section and the viewfinder tally light red, and the REC indication in the viewfinder lights green.

Note:

Individual code generator use in the PRESET mode the sound trigger switch may be recorded when the VTR trigger on the lens is pressed.

Individual code generator the variety of the property of the pr

To stop recording, press the VTR trigger again. The unit enters the Record-Pause mode. 9

When the VTR trigger is pressed, the unit enters the record-pause mode after rewinding the tape for about 1 to 1.5 second (back-spacing).

During the back-spacing, the lest section recorded on the tape is played in the reverse direction. However, during play in the reverse direction. However, during play in the reverse direction. However, during play in the reverse direction, block noise appears, four can use this as a reference to confirming whether recording has been made or not. When the CAMVTR switch is set to VTFF and the setup menutiem BACK SPACE MODE SELECT is set to PDF, the reverse playback image is output to the MONITOR OUTPUT connector and the vewfinder.

10. To restart recording: Press the VTR trigger on the camera.

Enter record-pause mode and perform the following operations as required. 11. End recording.

■When it is required to unload the cassette tape : Press the EJECT button.

Drum rotation stops and the DY-90 enters the tape ■When it is required to put the unit in save mode Set the VTR switch to SAVE.

8, 9, 10 VTR trigger

12. When shooting is completely finished, ejects the cassette and turn the power off.

protection/power-saving mode

- The STOP and EJECT buttons do not function during re-cording. These buttons function during the record-pause mode.
- The REC/ALARM indicator (green) in the viewfinder blinks until recording actually starts. This is not due to any defect of the unit, but indicates that the VCR is preparing for
- If the VTR trigger button is pushed very quickly and recording, repeatedly, the viewfinder tecord tally light may blink incorrectly and the DY-80 does not enter the record mode. To clear this condition, turn the POWER service ho OFF.

 A neaf transition to the next recorded scene cannot be guaranteed if you end a recording by setting the POWER switch to OFF be sure to enter record-pause mode before switching the unit OFF.

O BATT ALARM O-

- to ON again, this takes approximately ten seconds. During this operation, entry to the record mode is possible but After operating in the record-pause mode, wait for two seconds or more before switching off the power. If the power is switched off immediately after the record-pause mode is initiated, it automatically starts searching the end of the last recorded section when the power is switched recording cannot be carried out until the search is completed
- Before recording a scene which is particularly important, perform test shooting to ensure that normal recording is

8 TALLY light

7-2 Save Mode

record-pause mode. However the record-pause operation condition differs depending on the setting of the VTR switch.

A "STBY" indication appears in the VCR operation mode In this condition, pressing the VTR trigger button display in the viewfinder. (Status 1 mode) is rotating at this time. (Standby mode)

SAVE: The DY-90 enters the record-pause mode, however, the immediately starts recording.

ΥĦΥ switch (3)

Recording from the Save mode

- Pressing the VTR trigger button again stops recording and the



Figure shows U-ver

If Unit is Left in Record-Pause (Standby) Mode £-2

When the unit has remained in record-pause (standby) mode for about 30 minutes, the unit enters tape protect mode, in which the drum rotation is stopped automatically and the tape tension is released.

The time until the unit enters the tape protect mode after it is put to record-base mode can be set with the setup menu item "LONG PAUSE TIME SELECT" to 1 minute, 5 minutes or 30 minutes. (See page 64)

- ■To start recording from tape protect mode, press the VTR trigger button of the camera; the drum starts to rotate and recording starts in about 8 seconds.
- ■To return to record-pause mode from tape protect mode, press the VTR trigger button of the camera twice; the drum starts to

When a recordable cassette tape is loaded, the DY-90 enters the

7. SHOOTING OPERATION

VTR switch setting
 STBY: The DY-90 enters the record-pause mode, and the drum

drum is not rotating. (SAVE mode). The tape is protected.

A "SAVE" indication appears in the viewfinder during (Status 1 mode).

- In the save mode, pressing the VTR trigger button will start However, in this case, there are several seconds of interval before the DY-90 starts recording.
- DY-90 enters the save mode again.

20

2

7. SHOOTING OPERATION

7-4 Checking Recorded Contents in Record-Pause Mode (Recording Check Function)



 This function is available even when the DY-90 is in the save mode (VTR switch set to SAVE position).
 After operation is finished, the DY-90 enters the save mode.

In the record-pause mode, the last recorded portion can be played

back for approx. 2 seconds.

• The recorded contents can be checked with the viewfinder or the monitor connected to the MONITOR OUTPUT connector.

Set the CAM/VTR switch to the "VTR" position beforehand.

- In the viewfinder or on the monitor connected to the MONITOR OUTPUT connector, the video image from the VCR section is output.
- In the record-pause mode, press the RET button on the camera lens section.
 - The tape is slightly rewound and played back for approx. 2 seconds.

seconds.
After playback is finished, the tape is returned to the position at which the RET button is pressed and the record-pause mode resumes.

AUDIO MONITOR switch

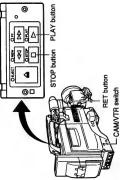
CAMINTR

When the RET button is kept pressed, the tape is rewound and played pack for approx. 10 seconds at maximum.

7-5 Cueing the Scene Change Point

When successive recordings are made, cue the scene change point before starting recording.

- After the tape is run
 When the cassette tape is ejected and loaded again
 - When recording from the middle of the recorded tape



Notes: -

- If the VTR trigger button is pressed in the middle of the automatic scene change cueing operation, the VTR trigger function is given priority so a neat transition to the next scene cannot be guaranteed.
 - Be sure to use the VTR trigger button to end every recording (because a pilot signal for ensuring a neat transition to the next scene is recorded when this is done.)
- The proper functioning of the automatic scene change cueing cannot be guaranteed if the recording time before entering the record-pause mode is less than 2 seconds.

- To check the playback image with the viewfinder or monitor, set the CAMVTR switch to the "VTR" position.
- 7. Press the STOP button to release the record-pause mode.

Set the PRESET/REGEN switch to "REGEN" for continuous

recording of the time code.

- $oldsymbol{2}_{oldsymbol{s}}$ Press the PLAY button to start playback.
- While watching the image on the viewfinder or on the monitor, press the STOP button at the point where you want to start recording.
- Press the RET button on the camera lens section.
 Rewind the tape for playback of approx. 2 second
- Rewind the tape for playback of approx. 2 seconds, and search the scene change pilot signal while the tape is played back.
 When the scene change pilot signal is detected, the DY-90
- If When the scene change pilot signal is detected, the DY-90 enters the record-pause mode from which the next recording is to be started.
 - ■When the scene change pilot signal is not detected, the DY-go enters the record-pause mode using the point as the scene change point at which the STOP button is pressed.

8. PLAYBACK MODE

8-1 Playback Procedure

Setup



switch. **DA1/DA2**: Outputs the audio signal from the DA1 and DA2

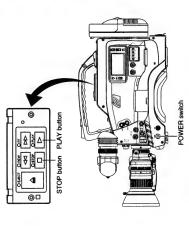
channels.

DA3/DA4: Outputs the audio signal from the DA3 and DA4 channels.

Audio output signals are output from the AUDIO OUTPUT connector (5-pin), monitor speaker and earphone jack.

Operation

- 7. Turn the POWER switch to ON.
- 2. Load the recorded cassette tape correctly.
 ■When a recordable cassette tape (with REC switch on the back of the cassette set to ON) is backed it he VCR section enters the record-pause mode (STBY or SAVE mode).
- Press the PLAY button.
 The PLAY indicator lights and playback starts.
- 4. To stop playback, press the STOP button. → The STOP indicator lights and the VCR section enters the stop mode.



- Notes:

- This unit is not capable of a manual tracking adjustment.
 The tracking is adjusted automatically during playback.
- When playing back the tape recorded with another VCR, digital noise may be generated.
 - This unit is not capable of still image playback.
- An S-VHS or a VHS cassette tape cannot be used with this
- When the automatic tracking function is activated at the start of the playback mode, digital noise may appear on the playback image.
- At the start of the playback mode, the audio signal from the linear tracks will be output. When the tape running is stabilized, the PCM audio signal is output.

Only the DA1 and DA2 channel signals are recorded on the linear tracks. For this, even when the VCB section is in the DA2DA4-channel output mode, only the DA1 and DA2 channel audio signals recorded on the linear tracks are output at the start of the playback mode.

PLAYBACK MODE

8-2 Fast-Forward, Rewind



- Press the FF button in stop mode to fast forward tape and press the REW button in stop mode to rewind tape.
- In fast forwarding and rewinding, the EE image and EE audio signal are output.
 - Press the STOP button to stop fast forwarding or rewinding.
- When the tape approaches the end during fast forwarding or rewinding, the tape speed decelerates to protect the tape.



forward direction at about 2 to 6 times the normal speed. Press the REW button in play mode to search the tape in the Press the FF button in play mode to search the tape in the reverse direction at about 1 to 6 times the normal speed.

Press the PLAY button to resume normal playback.

When the mode is changed from search to play mode, characters are displayed for a moment on the viewfinder screen. This is not a malfunction.

- The audio recorded on the linear track of the tape is repro-
- duced during the search.

 Regardless of the setting of the AUDIO MONITOR switch, the audio signals from DA1 and DA2 channels are output.

 Video noise may be observed or the image may become unstable during the search, but this is not a malfunction.

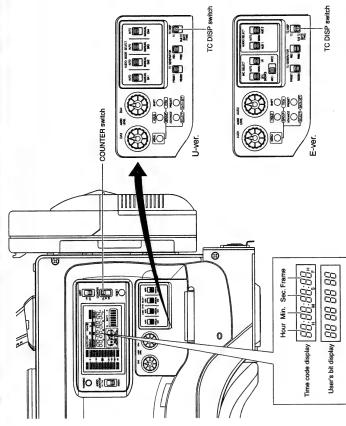
TIME CODE OPERATION

This unit records 2 time code areas on the tape; the main time code area which contains time codes for use as time data in editing, etc., and the sub-time code area which can optionally contain the date and time data.

- The main time code area contains the recording of SMPTE-standard time codes and user's bits. In play mode, the reproduced time codes or user's bits are shown on the counter display.
- . The sub-time code area contains the recording of the date and time data, which can also be shown on the counter display during
- Neither the main time code nor sub-time code data is output through the MONITOR OUTPUT connector.
 The generated time-codes are output from the TC OUT connector.

The following description begins with the handling method of the main time code. That of the sub-time code will be described from page

9-1 Displaying Time Code



The selected time codes can be shown on the counter display during playback and recording as follows.

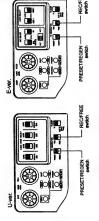
If it is set to SUB TC, sub-time codes (date and time data) will Set the TC DISP switch to "TC". be displayed.

■Set the COUNTER switch to "TC" or "UB". TC:Time codes are displayed. UB:User's bit data of time codes are displayed.

9. TIME CODE OPERATION

9-2 Presetting and Recording of Time Code

The time code or user's bit data to be recorded onto the tape can be preset to a desired value.



Setting the switches in the TC **GENERATOR block**

Set the PRESET/REGEN switch to PRESET.

Set the REC/FREE switch as follows.

REC : The data preset in the time code generator runs only time codes across scenes when recording them one during recording. Use this setting to record continual after another.

- REC/FREE switch

FREE: The data starts to run from the moment it has been preset in the time code generator

U-ver. only

Setup menu setting

Select the framing mode of the time code generator with setup menu item "TCG SELECT DROP/NON-DROP".

dF: The time code generator runs in drop frame mode. Use this nF:The time code generator runs in non-drop frame mode. Use setting when putting importance on the recording time.

about 29.97 frames, while the number of frames assumed for use in time code processing standard is 30 frames. The drop frame mode compensates for this difference by dropping frames 00 and 01 at With the NTSC format, the actual number of frames per second is

Drop frame/Non-drop frame modes

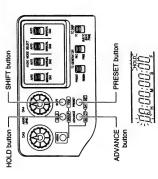
every minute whose figure cannot be divided by 10. The non-drop frame mode ignores the above difference and does not drop frames.

this setting when putting importance on the number of frames.

The NDF indicator on the LCD display lights in non-drop frame mode.

<u>מתימתימה מתימת </u>

TIME CODE PRESETTING PROCEDURE



Display the time code on the counter display.
 Set the COUNTER switch to TC.

Time code up to 23 hrs. 59 min. 59 sec. 29 frames can be

Put the time code generator in preset mode. Press the HOLD button.

The HOLD indicator lights on the display to indicate the preset mode. The first digit of the counter display blinks.

The value of the blinking digit changes. Set the value of the blinking digit. Press the ADVANCE button. S

The blinking digit changes. 4. Change the blinking digit. Press the SHIFT button.

Set the desired value for all digits. Repeat steps 3 and 4 for each digit. S,

ָרָם:חס:חס:חס:קה.

The set data is saved as the time code generator value. After the above operation, the HOLD indicator disappears from the display, the counter stops blinking and the time code Preset the set data in the memory. Press the PRESET button. ø.

If you preset a wrong time code, perform steps ${\bf 3,4,5}$ and ${\bf 6}$ again. to run.

If the REC/FREE switch is set to FREE, the time code starts

15.34.55.51

9. TIME CODE OPERATION

Presetting and Recording of Time Code (Cont'd) 9-2

PRESETTING USER'S BIT DATA



■Display user's bit data on the counter display and perform the

same procedure as the time code presetting procedure.
The user's bit can be specified using numerals or alphabets from 0 to F for each digit.

Pressing the RESET button in preset mode resets the time

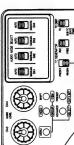
code or user's bit data to 00 00 00 00.

If you have pressed the HOLD button by mistake, press the HOLD button again to return to the previous display.

9-3 Recording Time Codes Continuously From Time Codes Recorded on Tape

The unit also incorporates a time code reader. Therefore, when the unit enters record mode from record-pause mode, it can read the time code data recorded on tape and record continual time codes after it. The recorded user's bit data is identical to the user's bit data recorded on tape.

To make this possible, set the switches in the TC GENERATOR block as follows before starting recording



U-ver.

PRESET/REGEN switch

The time code run mode becomes unrelated to the REC/ FREE switch settings. Set the PRESET/REGEN switch to REGEN.

Set the counter display to display time codes or user's bit

The framing mode of the time code generator becomes automatically identical to the mode used by the time codes recorded on the tape (drop frame or non-drop frame mode).

PRESET/REGEN switch E-ver.

When the PRESET/REGEN switch is set to REGEN, the time taken for entering record mode from record-pause mode becomes slightly longer.

20

9. TIME CODE OPERATION

Recording Time Codes by Slave-Locking the Built-in Time Code Generator with the External TCG 7-6

The built-in time code generator can be synchronized (slave-locked) with the SMPTE/EBU-standard LTC time code signal which is input through the TC IN connector. Once the slave locking has been carried out, the built-in time code generator runs even when the external time code input stops. Even when the power is swirched off, it continues to run on the backup lithium battery.

TC IN connector GENLOCK IN connector When the power is switched ON while external sync signal is input, the screen moves in a vertical direction for a few seconds. This is not a malfunction. LTC time code signal REF video signal REF video signal Note:

Input the reference video signal into the external time code generator and the GEN LOCK IN connector of this unit.

 $oldsymbol{2}$. Display time code on the counter display.

Set the switches in the TC GENERATOR block as follows.Set the PRESET/REGEN switch to "PRESET".Set the REC/FREE switch to "FREE".

■ Setup menu setting Stave ON/OFF" as required. Set setup menu than "U-BIT SLAVE ON/OFF" as required. • Set to "ON" if you want to also slave lock the user's bits to the external time code generator.

U-ver. only

The framing mode is set automatically to the same mode as the input time code (drop frame or non-drop frame mode). The NDF indicator lights on the display if the framing mode is the non-drop frame mode.

→ The built-in time code generator is stave-locked with the input external time code data.
The SLAVE indicator lights on the display. 4. Set and operate the external time code generator.



* If the external time code generator phase is not genlocked with the phase of the camera video signals, the "SLAVE" display will flicker.

 Once slave locking has been made, the built-in time code generator keeps on running even when the external time code generator is stopped.

- Note:

will not take place.

Do not connect or disconnect slaves during recording as this may disturb the servo lock. While the REC/FREE switch is set to "REC", slave-locking

Multi-Camcorder Master-Slave Connection

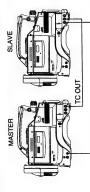


figure left.

When connecting several DY-90s as slaves, input the REF video signal to GENLOCK IN connectors of all these units from the sync When there is only one slave DY-90, connect it as indicated in the signal generator.

9-5 Reproducing Time Codes

The unit incorporates a time code reader which outputs the time codes and user's bit data recorded on the played tape is displayed on the counter display. The played time codes and user's bit data are not output from the TC OUT and MONITOR OUTPUT connector.

9. TIME CODE OPERATION

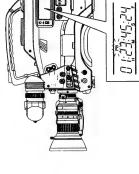


■Reproduce time codes.

Press the PLAY burnons on the display and the reproduced

The PB indicator lights on the display and the reproduced time code or user's bit data is displayed.

Set the counter display to display time codes or user's bit data.



28

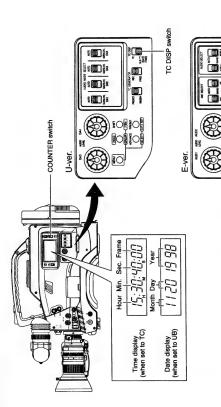
MONITOR OUT

9. TIME CODE OPERATION

9-6 Sub-Time Code (Date, Time)

The unit records a sub-time code area as an additional time code recording area to the main time code area. The sub-time code area contains data on the date and time of the day.

DISPLAYING SUB-TIME CODE



The date and time data based on the sub-time codes can be displayed during playback and recording.

■Set the TC DISP switch to "SUB TC"

Set the COUNTER switch to "TC" or "UB".

When set to TC : Time data (hour, minute, second, frame) is

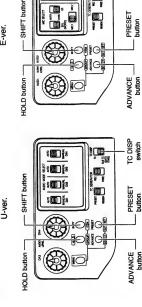
When set to UB : Date data (month, day, year) is displayed.

TC DISP switch

no.

SETTING THE DATE AND TIME

The set date and time data is stored in the sub-time code area on tape. The set date/time data will continue the counting on the backup lithium battery, even when the power is switched off.



TC DISP switch 200 PRESET button ADVANCE

9. TIME CODE OPERATION

(Cont'd) 9-6 Sub-Time Code (Date, Time)

76ar 19 99
Month Day

Set the TC DISP switch to SUB TC and the counter switch to UB. Display the date on the counter display.

Setting the Date

The HOLD indicator lights on the display, indicating that the VCR is in the 2. Press the HOLD button to initiate the setting mode.

19:30

1133

8681 0211

U-ver.

The the first two digits of the counter display blinks.

 Press the ADVANCE button to set the figure of the blinking digit. 3. Set the figures of the month.

4. Similarly, set the figures of day and year by pressing the SHIFT button to change the blinking digit and pressing the ADVANCE button to set its figure.

5. Press the PRESET button to save the set date in the memory. The HOLD indicator on the display turns off and the date display stops blinking.

85 1010

Year

Day Month

Setting the Time of the Day

E-ver. Sec

80 OZ

Display the time data on the counter display.

■ Set the TC DISP switch to SUB TC and the counter switch to TC.

2. Press the HOLD button to initiate the setting mode. The HOLD indicator lights on the display, indicating that the VCR is in the

3. Similarly to the date setting operation, set the figures of the hour, minute The first digit of the counter display blinks.

The hour should be set in the 24-hour mode

and second using the SHIFT and ADVANCE buttons

The frame cannot be set. It will be fixed to 00.

The HOLD indicator on the display turns off and the time starts to count. 4. Press the PRESET button to save the set time in the memory.

100°1 15'10E'5/

15.30.41.00.

Hour Min.

REPRODUCING THE DATE AND TIME

The recorded date and time data is not included in the video signal output from the VIDEO OUT connector or the time code signal

output from the TC OUT connector.

The data is displayed only on the counter display of the VCR section during playback of the tape.

* When a tape recorded with this unit is played on a desk-top type DIGITAL S VCR (e.g. NC BR-D50U/D51U/D80U/D85U, etc.), the date or time data is shown on the sub-time code display of the DIGITAL S VCR. The time data is displayed when the COUNTER switch of the DIGITAL S VCR is set to UE.

10. SETUP MENU

10-1 VCR Setup Menu

The setup menus for VCR section can be set by referring to its counter display. The setup menu is not output to the MONITOR OUTPUT connector or viewfinder. The set contents are stored in the memory and held even after the power is switched OFF.

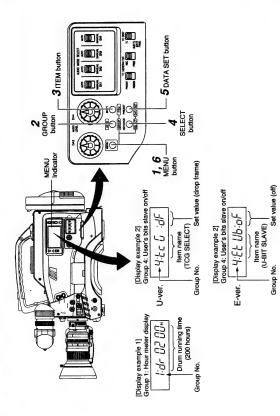
VCR SETUP MENU CONFIGURATION

The setup menus are divided into 4 groups. Groups 1, 2 and 3 consist of display-only items such as the hour meter display, while Group 4 contains some items which can be set individually as required.

		Dischary/Cotting Contents
Setup menus		Dispiral/pering contents
Group 1		— Group 1 Hour meter (Drum running time) display
— Group 2		Group 2
Group 3		Group 3 Battery voltage display
Group 4	met!	: Selection of time code generator framing mode (drop frame/non-drop frame) [U-ver. only]
	- Item	: Selection of user's bit data during slave locking to time code (ON/OFF)
	- Item	: Selection of battery type (12 V/13.2 V/14.4 V)
	- Item	; Selection of long pause time (1 min./5 min./30 min.)
i	- tem	: Selection of audio signal low frequencies cut for rear DA1 input connector (OFF/ON)
	- Item	: Selection of audio signal low frequencies cut for front DA2 (MIC) input connector (OFF/ON)
	- Item	: Selection of audio signal low frequencies cut for rear DA3 input connector (OFF/ON)
	ltem -	: Selection of audio signal low frequencies cut for front DA4 (MIC 1) input connector (OFF/ON)
	Ten	: Selection of image to be viewed in the Viewfinder or monitor during back spacing (PB/EE)

10-1 VCR Setup Menu (Cont'd)

DISPLAYING AND SETTING VCR SETUP MENUS



- Fress the MENU button.
- The MENU indicator lights on the display and the counter display shows the setup menu.

- 2. Select the group.
 Press the GROUP button.

 The group No. shown on the counter display changes.

 Each press of the GROUP button changes the displayed group No. from Group 1 Group 2 Group 3 Group 4 Group 1....

 The group No. from Group 1 Group 2 Group 3 Group 4 Group 1....

 The menu mode after simply confirming the
 - To exit from setup menu mode after simply confirming the display in Group 1, 2 or 3, press the MENU button now. The VCR section returns to normal mode. ■ Proceed to the following steps when you want to confirm or set the setup menus in Group 4.
 - 3. Select a Group 4 item.
 Press the ITEM button
- The setup menu item shown on the counter display changes.
 - Pressing the ITEM button when the Group 1, 2 or 3 display is shown does not change it.

- Repeat steps 3 and 4 above for each of the items you want Select the setting value of the selected setup menu item. Press the SELECT button to select the setting value.
- 5. Save the setting value.
- Press the DATA SET button.

 -- "SAVE" is displayed on the counter and the setting value is saved in the VCR memory. The counter display returns to the setup menu display when data has been saved.
- 4:-5 Ru:E-
- 6. Quit setup menu mode.
 Press the MENU button.
 The VCR section returns to normal mode.
- If setup menu mode is quitted without saving the setting value changed with the SELECT button, "Moort" is displayed on the counter display for about 3 seconds. To display the previously operated setup menu again, press the MENU button again while "Abort" is displayed.

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10. SETUP MENU

10-1 VCR Setup Menu (Cont'd)

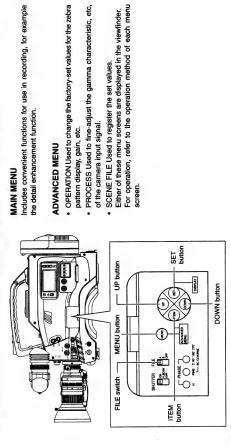
SETUP MENU CONTENTS

Contents	Shows the accumulated running time of the head drum. (200 hours in this example)	Shows the remaining tape time in "hours:mins.". (30 minutes)	Battery voltage in V. (12.5 V)	Selects time code generator framing mode between drop frame and non-drop frame mode. An on-drop frame mode. Built-in TCS runs in drop frame mode. Use this setting when recording time is important. In Sull-in TCS runs in mort-drop frame mode. Use this setting when frame count is important. Factory setting: dF (Non-drop frame mode)	Selects whether user's bit data is also slave-locked when the unit is slave-locked to an external TCG. Slave locked. or Slave locked. or Not slave locked. Factory setting: of (Not slave locked)	 Set according to the type of battery pack in use. 12 : 12 V (Set when using the NB-G1 or a 12VDC Flat Shape Type battery pack.) 	13 : 13.2 V (Ser when burgh Alan-Bauer Timpack 13, Propack 13, Magnum 13 or Compack 13, 14 : 14.4 V (Set when using Anton-Bauer Timpack 14, Propack 14, Magnum 14 or Compack 14, 9 - Factory setting 12 (12 V) • Mhen powered through the DC input connector, the setting is fixed at 12 V.	Sels the time before the VCR section in record pause or stop mode enters the tage protect mode (in which the drum stops rotation). Of 1 minutes Of 5 minutes 30 : 30 minutes 30 : 30 minutes Factory setting : 30 (30 minutes)	 Selects whether the low frequencies of the audio signal from the audio input connectors (DAT 10 DA) are cut or not. Set to DW when reducing the wind noise of the microphone. Each lies should be set for each input connector. 	or: OFF (without LOW CUT function) on: ON (with LOW CUT function) • Factory setting: oF			• Selects an image to be viewed in the viewfinder or monitor during backspacing in the Record/Prusse mode (Effective only when the CAMVTR switch is set to VTR). Pb : Allows viewing of the tast section recorded on the tape in reverse playback, it may result in some block noise. EE : Allows viewing of the image coming from the camera. • Factory Setting: Pb (PB)
Counter Display	1:dr 02:00+	2:Fr 00:30	3:64 12:50	4:≿c	4:EE Ub:on oF	4:68 £E: 12+	matriling 3 1	50 50 10:00 u7:h	4:Lc A l:of	4:Lc A2:of oo	4:Lc A3:of	4:Lc A4:0F *	4;pc 5p;pb
Sotus Monii Nome	DRUM HOUR METER	TAPE REMAIN	BATTERY VOLTAGE	TCG SELECT DROP/NON-DROP (U-ver. cnly)	U-BIT SLAVE ON/OFF	BATT.TYPE SELECT	If this setting is wrong, the remaining battery power display and the battery alarm will not function properly.	LONG PAUSE TIME SELECT	DA1 LOW CUT SELECT	DA2 LOW CUT SELECT	DA3 LOW CUT SELECT	DA4 LOW CUT SELECT	BACK SPACE MODE SELECT
	DRUM	TAPEF	BATTE	ITEM									
Group	o –	2	6	4									

10. SETUP MENU

10-2 Camera Section Setup Menu

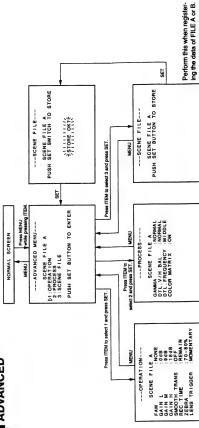
In the camera section of this unit, there are two menu screens; MAIN MENU and ADVANCED MENU.



MAIN

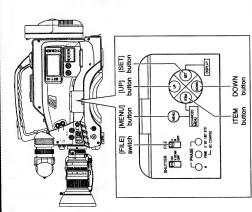


■ ADVANCED



10. SETUP MENU

10-3 Camera Section MAIN MENU Screen



<Setup Procedure>

- $m{I}_{m{\cdot}}$ Using the FILE switch, select the required file to be set up.
- **Z.** On the normal screen, press the MENU button to display the MAIN MENU screen in the viewfinder.
- $\boldsymbol{3}_{\bullet}$ Using the ITEM button, move the cursor ([>) to the required item to be set up.
 - $oldsymbol{4}_{oldsymbol{\circ}}$ Change the setting value using the UP or DOWN button.
- 5. Press the MENU button to resume the normal screen. At this time, the setting values are registered into the memory of DY-80. The set values are maintained even if the power is turned off.



Item	Function, Operation	Variation Range	Initial Setting
DETAIL	Adjusts the detail enhancement level. • To sharpen details Increase the number. • To soften details Decrease the number.	MAX (9) 8 1 1 NOFMAL (0) -1 -6 MIN (-7)	NORMAL
MASTER, BLACK	Adjusts the padestal level (master black) which is the reference of black. • To increase the pedestal level Decrease the number. • To decrease the pedestal level	MAX (10) 9 1 . NOFIMAL (0) -1 - -9 MIN (-10)	NORMAL
IRIS	Changes the setting value of the detecting level in the auto iris mode. • PEAK	PEAK NORMAL AVG	NORMAL
V.RESOLUTION	Increases the vertical resolution. • NORMAL	NOFMAL V. PLUS V. MAX	NORMAL

10-3 Camera Section MAIN MENU Screen (Cont'd)

10. SETUP MENU

Item	Function, Operation	Variation Range	Initial Setting
BACK TALLY	Selects whether the BACK TALLY lamp on the handle section of this unit is activated or not. ON	OFF OFF	NO
F NO.DISPLAY	Selects whether the F number of the lens iris is displayed in the Status 1 screen or not. ON F number is displayed. OFF F number is not displayed.	ON OFF	NO
AUDIO DISPLAY	Selects whether the audio indicator is displayed in the Status 1 screen or not. ON: Audio indicator is displayed. OFF: Audio indicator is not displayed.	ON OFF	No
SAFETY ZONE	Selects the safety zone setting. See "Safety Zone" on page 29.	OFF ZONE1 ZONE2 ZONE3	OFF
SET UP BOX OPERATE	Recalls the set up box operation screen. See "Set Up Box Operation" on page 78.		

10. SETUP MENU

10-4 Camera Section ADVANCED MENU Screen

In the ADVANCED MENU screen, there are two sub-menu screens ; 1 : OPERATION (for operations) and 2 : PROCESS (for video

The values set in the ADVANCED MENU screen can be registered in the three types of memory areas — FILE A, FILE B and FILE OFF. When the values registered in FILE A and FILE B are stored in the memory of this unit with 3: SCENE FILE screen, they are maintained even when the power is turned OFF. The values registered in the FILE OFF are registered in the memory of the DY-90 when the ADVANCED MENU screen is resumed, therefore, they are also maintained when the power is turned off.

<Setup Procedure>

UP button

MENU

FILE

- 7. Set the FILE switch to the file position to be set up.
- 2. In the normal screen, while pressing the ITEM button, press the MENU button to display the ADVANCED MENU screen (FILE A, B, OFF)
- 3. Press the ITEM button to move the cursor (|>) to the select screen (1: OPERATION or 2: PROCESS). in the viewfinder.

SET button DOWN

DESTLAY

ITEM --

- - $oldsymbol{4}_{oldsymbol{s}}$ Press the SET button to display the select screen.
- $m{5}_{\bullet}$ On the select screen, select the setting item using the ITEM button. (The selected item blinks.)
- 6. Using the UP or DOWN button, change the value of the selected item.

PUSH SET BUTTON TO ENTER

---ADVANCED MENU---

SCENE FILE A 2:PROCESS 3:SCENE FILE

Cursor

ADVANCED MENU screer

---OPERAT ! ON---

7. After the setting is finished, press the MENU button to return to the ADVANCED MENU screen.
To register the setting values for FILE A or B, carry out the following procedure. The data in the FILE OFF is registered when the screen returns to the ADVANCED MENU. The registered data is maintained even if the power is turned off.

<Registration Procedure>

SCENE FILE A
FAW
SOENE FILE A
GAIN IL
GAIN M
GAIN M
GAIN M
GAIN M
HECTINE
THE THE
LENS TRIGGER **CAMERTRY
LENS TRIGGER **CAMERTRY

Select screen MENU button

When the registration of FILE A or B is performed, since the setting value is stored in the memory of this unit, it is not cleared even when the power is turned OFF. (Registration operation is not required for the data of FILE OFF.)

- **7.** Press the ITEM button to move the cursor (>) to the 3: SCENE FILE item.
 - $oldsymbol{2}$. Press the SET button to display the SCENE FILE screen.

SET

1

THANKE L

ITEM -

- "STORE OK?" is displayed.
 When the SET button is pressed again, the setting value is registered in the FILE and the ADVANCED SCHEEN is restored. When the registration is not required, press the MENU button in the SCENE FILE screen to return to the ADVANCED $oldsymbol{3}$. When the SET button is pressed in the SCENE FILE screen,
- If the FILE is set to OFF, "PUSH MENU BUTTON" is displayed.
- When the MENU button is pressed, The Normal screen is



3

PUSH SET BUTTON TO ENTER

---ADVANCED MENU--

SCENE FILE A 1:OPERATION 2:PROCESS -b3:SCENE FILE

Cursor

PUSH SET BUTTON TO STORE

---SCENE FILE---

10. SETUP MENU

10-4 Camera Section ADVANCED MENU Screen (Cont'd)

OPERATION SCREEN

Item	Function, Operation	Variation Range	Initial Setting
FAW	Selects the position of the WBAL switch (a) (on page 13) where the FAW (Full-Time Auto White Balance Adjustment) function is to be assigned. NONE	1 5	NONE
GAIN L	Selects the gain value in the GAIN L position of the sensitivity select switch.	-3dB odB odB odB odB odB odB odB odB 12dB 12dB 18dB level control) See page 76 for the ALC function.	0 dB
GAIN M	Selects the gain value in the GAIN M position of the sensitivity select switch.	-3dB OdB 6dB 6dB 9dB 12dB 18dB 18de 18de 18de 18de See page 76 for the ALC function.	gp 6
GAIN H	Selects the gain value in the GAIN H position of the sensitivity select switch.	-3dB odB 6dB 9dB 12dB 18dB ALC (Auto gain level control) See page 76 for the ALC function.	18 dB
SMOOTH TRANS	Smoothens the transition when the GAIN switch @ (on page 12), or W.BAL switch @ (on page 13) is switched over and achieves gradual change in place of sudden change. ON	ON OFF	OFF
RECTIME	Sets either the remaining tape recording time or TIME CODE to be displayed on the viewfinder screen. TIME CODE	TIME CODE REMAIN	REMAIN

SCENE FILE screen

10. SETUP MENU

10-4 Camera Section ADVANCED MENU Screen (Cont'd)

Item	Function, Operation	Variation Range	Initial Setting
ZEBRA	Switches the brightness level of the object section where the zebra pattern is displayed. 70-80% Zebra pattern is displayed in sections with brightness 85-95% Levels between 70% and 80%. 85-95% Levels pattern is displayed in sections with brightness levels between 85% and 90%. OVER 95% Levels pattern is displayed in sections with brightness levels over 95%. COVER 100% Levels pattern is displayed in sections with brightness levels over 100%.	70 – 80%, 85 – 95% OVER 95% OVER100%	70 – 80%
LENSTRIGGER	Changes the lens trigger setting according to the lens in use. MOMENTARY Compatible with momentary (non-lock type) triggering. Mainly used with lenses using the 12-pin connector. ALTERNATE Compatible with alternate (lock type) triggering. Mainly used with lenses using the 8-pin connector.	MOMENTARY ALTERNATE	MOMENTARY

PROCESS SCREEN

- The set values can be changed with the UP or DOWN button.
 After setting, press the MENU button to return to the ADYANCE MENU screen.
 In case no renister the set value in the FILE A or FILE B, select "3 SCENE FILE" with the ITEM button and press the SET button.

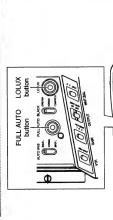
Item	Function, Operation	variation harige	Initial Setting
_Б амма	Correction of the gamma curve to decide the replay ability of black color. • To enhance the black color replayed, however, halffones will be lost for white section	MAX 7 18 step to (including OFF) NORMAL to -7 MIN	NORMAL
	Note: • During the LOLUX operation, " FIX" is displayed because GAMMA is fixed at the MIN value. • When GAIN is set to 18 dB, "FIX" is displayed because GAMMA is fixed at the MIN value.	OFF	
отг. v/н вАL	Sets the direction, horizontal (H) or vertical (V), in which stronger detail enhancement is applied. • To strengthen the H enhancement increase the number (UP). • To strengthen the V enhancement Down).	H-MAX (4) 3 to 9 step NORMAL to to -3 H-MIN (-4)	NORMAL
DTL. FREQUENCY	Varies the detail enhancement level by changing the contour frequency emphasis. The setting depends on the subject: • HIGH Applies strong detail enhancement emphasis. Used to shoot subjects with fine patterns. • LOW Applies medium detail enhancement emphasis. • LOW Applies wask detail enhancement emphasis.	HIGH MIDDLE LOW	ГОМ
	Note: • The DTL. FREQUENCY cannot be set when the GAIN of the AD-VANCED MENU is set at 18 dB.		

10. SETUP MENU

10-4 Camera Section ADVANCED MENU Screen (Cont'd)

Item	Function, Operation	Variation Range Initial Setting	Initial Setting	
OLOR MATRIX	COLOR MATRIX Sets the color matrix	NO	NO	
	 ON The color replayed is enhanced, but noise increases. 	OFF		
	OFF Deactivates the color matrix function			
	Note:			
	When the GAIN value exceeds +15 dB, the color matrix does not func-			
	tion even in the ON position.			
	During the LOLUX operation, COLOR MATRIX is fixed to the OFF			
	setting and * FIX * is displayed.			

10-5 Resetting Setup Data

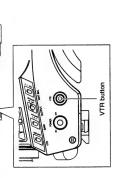


Resetting the FILE data
Data registered in the FILE A or FILE B areas can be cleared to restore the initial setting value.

<How to reset FILE A>
While pressing the FULL AUTO button, turn the power ON.

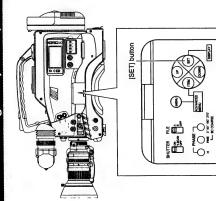
<How to reset FILE BS</p>
While pressing the LOLUX button, turn the power ON.

<How to reset FILE OFF>
While pressing the VTR button, turn the power ON.



10. SETUP MENU

10-5 Resetting Setup Data (Cont'd)



System Reset

Data registered for all setting items can be cleared to restore the initial setting values.

The mechanical switch positions and auto white balance memory are not cleared.

How to reset the system

While pressing the SET button, turn the power ON.

System Reset Items and Initial Setting Values

ltem	Initial Setting Value	
SHUTTER	1/100 (U-ver.), 1/120 (E-ver.)	SCEN
V.SCAN	1/100.2 (U-ver.), 1/120.1 (E-ver.)	
STATUS SCREEN	STATUS 0	
гогих	OFF	
FULL AUTO	OFF	
DETAIL	NORMAL	
MASTER BLACK	NORMAL	
IRIS	NORMAL	
V.RESOLUTION	NORMAL	
BACK TALLY	NO	
F.NO DISPLAY ON		
AUDIO DISPLAY	NO	
SAFETY ZONE OFF		

	III	Illinal Setting Value
SCENE FILE	FAW	NONE
	GAIN L	9PO
	GAIN M	gp6
	GAIN H	18dB
	SMOOTH TRANS	OFF
	REC TIME	RENAIN
	ZEBRA	70-80%
	LENS TRIGGER	MOMENTARY
	GAMMA	NORMAL
	DTL.V/H BAL	NORMAL
	DTL.FREQUENCY	row
	COLOR MATRIX	NO

11. FEATURES OF THE CAMERA SECTION

11-1 Full-Time Auto White Balance (FAW)

SCENE FILE A SCENE FILE A FILE A SCENE FILE A FILE SCENE SCE FAW GAIN L GAIN M GAIN M GAIN H SMOOTH TRANS TEC TIME ZEBRA LENS TRIGGER

as the lighting condition changes. This mode is convenient when you have no time to adjust the white balance or when the camera is moved frequently in and out of places under different lighting conditions.

The FAW function adjusts the white balance value automatically



This item allows setting of the FAW function to one of the white behance switches, A, B or PHESET. Select "NONE" if the FAW See page 69.

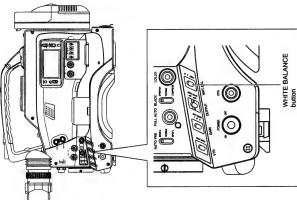
The FAW function can be activated with item "FAW" on the Ad-

Setting procedure

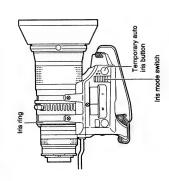
vanced Menu.



adjustment range, for example when it contains only a single color or not enough white color. vide optimum white balance with an object outside the FAW The FAW(Full-time Auto White balance) function cannot pro-- CAUTION:



LENS IRIS ADJUSTMENT



The Iens iris can be adjusted by any of the following three methods

Set the iris mode switch to "A (Auto)". Automatic adjustment

The iris is adjusted automatically according to the brightness of the object.

Manual adjustment

Set the iris mode switch to "M (Manual)".

The iris can be adjusted manually by rotating the iris ring.

When this button is pressed during manual iris adjustment, the auto iris adjustment mode is activated only while this but-· Temporary auto iris adjustment ton is held depressed.

Changing the auto Iris adjustment setup

Under special lighting conditions such as back-light condition, it is often suitable to change the value set by the auto iris ad-

 Setting the AUTO IRIS LEVEL switch of the camera head This can be done by any of the following methods.

 Setting item "IRIS" in the Main menu screen. (See page 66.) (See page 77.)

ZEBRA PATTERN DISPLAY DURING MANUAL ADJUSTMENT



tern) can be displayed in the sections with signal levels of 70% to 80% on the viewfinder screen. By setting the ZEBRA switch to ON, oblique stripes (zebra pat-

The zebra pattern can be used as a reference for manual iris adustment. terns are displayed in the section which you want to stress in the object.

setting on the ADVANCE MENU, zebra patterns can be dis- The initial setting is 70 to 80%. However, with the "ZEBRA" played in the section of 85 to 95%, over 95% and over 100% in brightness level. (See page 70)

11. FEATURES OF THE CAMERA SECTION

11-3 Shooting the Screen Image on the Computer Monitor

 The following operation allows the alignment of the shutter speed of the camera with the variable scanning rate of the computer monitor or display.

Band

 When a computer monitor or display is shot with the camera, a cating insufficient exposure is displayed in cases when the moniin cases when the scanning rate of the monitor is faster than the shutter speed of the camera or a dark horizontal line indibright horizontal line indicating excessive exposure is displayed tor's scanning rate is slower than the camera's shutter speed.

Video monitor

 The scanning frequency of the monitor is variable due to varining rate so as to obtain a stable image while observing the ous reasons during the computer operation. Adjust the scanimage on the viewfinder screen.

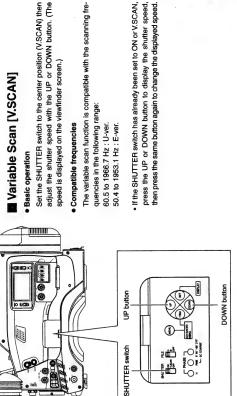
■ Variable Scan [V.SCAN]

Basic operation

speed is displayed on the viewfinder screen.) Compatible frequencies

The variable scan function is compatible with the scanning frequencies in the following range:

60.5 to 1966.7 Hz : U-ver. 50.4 to 1953.1 Hz : E-ver. If the SHUTTER switch has already been set to ON or V.SCAN, then press the same button again to change the displayed speed. press the UP or DOWN button to display the shutter speed

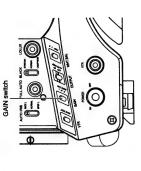


11. FEATURES OF THE CAMERA SECTION

11-4 Gain (Sensitivity) Adjustment

The gain should be switched when the brightness is not enough due to the poor lighting condition.

GAIN SWITCHING



This switch allows the gain to be boosted when the illumination of the object is insufficient.

_				
Factory-Set Gain	O dB	Bp 6	18 dB	
Switch Position F	_	Σ	I	

When this is switched, the newly set gain is displayed for a few seconds on the status 0 or mode 1 screen inside the viewfinder. Set it to L (0 dB) in normal use.

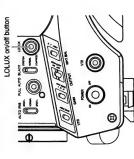
- The gain set with each of the switch positions can be set with "GAIN" of the ADVANCED MENU. See page 69 for details.
- It is also possible to use the ALC which varies the gain automatically. See page 69 for details.
 - The gain transition can be made smoother using "SMOOTH TRANS" of the ADVANCED MENU. Smooth gain transition

However, note that the SMOOTH TRANS function is not available if the switch is set to ALC.

CAUTION FOR THE GAIN SETTING

- When the GAIN is set to 18dB, GAMMA is fixed at the MIN and "FIX" is displayed on the GAMMA item of the Advanced menu screen.
- in order to make the screen look brighter, the noise is increased a little with the ALC (Auto Level Control) function compared to that when the sensitivity is increased If the illumination is insufficient when GAIN is set to the ALC, the sensitivity is increased automatically. However, manually.

GAIN BOOST UNDER LOLUX CONDITION



illumination insufficient cannot be compensated for with the GAIN The LOLUX on/off button is designed to be used when insufficient

Press the button to enter the LOLUX mode in which the gain is boosted by about 33 dB switch alone.

"LOLUX ON" is displayed for a few seconds on the status 0 or 1 Pressing the button again cancels the LOLUX mode. mode screen inside the viewfinder.

"LOLUX OFF" is displayed for a few seconds.

will degrade to increase residual images, but it is not a ■ When the LOLUX is in use, the image definition on the screen

[Relationship between gain, iris and shutter]

0.7 Lx		32 Lx		2000 Lx	4200 Lx	95	18000 Lx
	•	FULL AU	- FULL AUTO SHOOTING				
33 dB	18 dB	8P 0			1/60	22	1/240: U-v 1/200: E-v
LOLUX	ALC		AUTOMATIC IRIS			₩	
		F1.4		FII	F16		1

-V8r.

11. FEATURES OF THE CAMERA SECTION

11-5 Switch Setup According to Illumination and Object

SWITCH FUNCTIONS

BLACK stretch/black 0 AUTO IRIS LEVEL

This switch allows changing of the reference value for the BACK. L : When the object is in the back-light condition. auto iris adjustment according to the lighting condition. **AUTO IRIS LEVEL** switch

Sets the Auto Iris reference value to a value which is about 1 step wider than the standard : When the object is under a spotlight. : Normal lighting condition. NORMAL

Sets the Auto Iris reference value to a value which is about 1 step narrower than the stand-SPOT. L

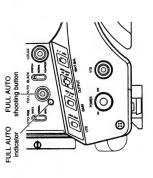
ard setting.

On the black screen, this switch makes the image easier to BLACK STRETCH : Boosts the black gain to improve the BLACK stretch/black compress switch see by varying the black gain.

BLACK COMPRESS: Attenuates the black gain to make the reproducibility of black color. : Normal black gain. NORMAL

image sharper.

FULL AUTO SHOOTING (FAS) FUNCTION



ing conditions which varies as you move between indoors and The FAS function provides a wide range of compatibility with shootoutdoors or between bright and dark locations. It is not necessary The FAS function provides an integrated control of the ALC (Automatic Level Control), Auto iris and FAW (Full-time Auto White balto change the switch and filter positions every time you move. ance) functions.

Operation

- 1. Simply press the FULL AUTO button to enter the FAS mode, in which the FULL AUTO indicator lights and "FAS" is displayed on the right of the viewfinder screen
- 2. Pressing the FULL AUTO button again cancels the FAS mode and turns the FULL AUTO indicator off.

■ Automatic Setting Contents

- If you have been displaying the color bars, the screen is switched automatically to the camera image.
- The auto iris adjustment mode is entered even if the iris mode switch of the lens is set to Manual.
- The GAIN switch and WHT.BAL switch settings are defeated in the FAS mode.

When the power is switched ON in the FAS mode, it will take approximately 10 seconds for the FAS to complete

 During FAS mode, the audio recording level is not set auto-This is set according to the AUTO/MANUAL switch of the VCR section.

matically to the AUTO mode.

Do not perform any recording during these few seconds

automatic adjustment.

- However, the ALC and EEI are defeated in the LOLUX mode, All of the previous setting contents are recalled when the FAS The LOLUX button setting is active even in the FAS mode. in which only the auto iris adjustment and FAW are used.
- The SMOOTH TRANS function is defeated during switching by the FAS function. mode is canceled.

11. FEATURES OF THE CAMERA SECTION

11-6 Set Up Box Operation

When the set up box is used, the data registered in the FILE (A, B or OFF) memory can be written to be recalled later

<Attaching>

Insert the set up box as shown in the figure and tighten the screw (regardless of the power being ON or OFF).

The setting data in the FILE can be written onto the set up box.

<Writing>

7. Select the FILE to be written.

- Depending on the FILE switch setting, operation differs as
- : Menu switch data registered in FILE A of this unit is written onto FILE A of the set up box.

000

Manual Co

- B : Menu switch data registered in FILE B of this unit is written onto FILE B of the set up box.
 - OFF: Menu switch data registered in FILE OFF of this unit is written onto FILE OFF of the set up box.
- $oldsymbol{2}_{oldsymbol{-}}$ In the normal screen, press the MENU button to display the MENU screen in the viewfinder.

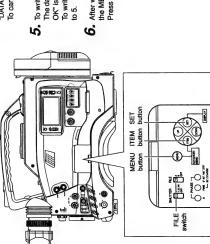
0

3. Using the ITEM button, move the cursor ([>) to the SET UP BOX OPERATE frem and press the SET button. The SET UP BOX OPERATE screen appears and the FILE which is set at procedure "1," is displayed. (A, B, OFF)

XXX UP BOX

C O O O

- $m{4}_{\bullet}$. Using the ITEM button, move the cursor (\triangleright) to the DATA WRITE item and press the SET button.
- "DATA WRITE OK?" is displayed. To cancel writing, press the MENU button.
- **5.** To write the data, press the SET button. The data of this unit is written onto the set up box and "WRITE OK" is displayed. To write another FILE data, repeat the operations in steps 1
- After writing is finished, press the MENU button to return to the MENU screen. Press the MENU button again to restore the normal screen.



DATA READ DETAINED TO SERVICE A DETAINED TO SERVICE A MASTER BACK NORMAL IN SECULTION NORMAL V. RESOLUTION NORMAL FOOL DISTLATOR PROPERTY ON SECULT ON SECURT ON SECULT ON SECURT ON SECULT ON SECUL

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-SET UP BOX OPERATE-SCENE FILE A PUSH SET BUTTON

-SET UP BOX OPERATE-DATA READ 2∟ -SET UP BOX OPERATE-SCENE FILE A DATA READ

SCENE FILE A

WRITE OK PUSH SET BUTTON

11. FEATURES OF THE CAMERA SECTION

11-6 Set Up Box Operation (Cont'd)

<Read Out>

The data in the set up box can be read out and written onto this

7. Select the required FILE. Depending on the FILE switch setting, operation differs as

and written onto FILE A of this unit.

: Menu switch data in FILE B of set up box is read out and written onto FILE B of this unit. : Menu switch data in FILE A of set up box is read out

> 000

- OFF: Menu switch data in FILE OFF of set up box is read out and written onto FILE OFF of this unit.
- $oldsymbol{2}$. In the normal screen, press the MENU button to display the MENU screen in the viewfinder.
- 3. Using the ITEM button, move the cursor ((>) to the SET UP BOX OPERATE frem and press the SET button. The SET UP BOX OPERATE screen appears.

SET

MENU

ITEM button

FILE

- $m{4}_{\bullet}$ Using the ITEM button, move the cursor ([>) to the DATA READ item and press the SET button. "DATA READ OK?" is displayed.

 To cancel reading, press the MENU button.
- The data of the set up box is read out and written into the unit, then "READ OK" is displayed. 5. To read out the data, press the SET button.
 - To read out another FILE data, repeat the operation in steps 1 to 5.

DETAILS ON PARTY OF THE A MANAL MASTER BLACK NOWAL WESTER BLACK NOWAL WESTER STATE OF THE A MANAL WESTER STATE OF THE A MANAL WESTER WESTER STATE OF THE A MANAL WESTER WESTER WESTER WITH A MANAL WESTER WESTER WITH A MANAL WESTER WESTER WESTER WITH A MANAL WESTER WESTE

2

-SET UP BOX OPERATE-

SCENE FILE A

DDATA READ DATA WRITE

-SET UP BOX OPERATE-

SCENE FILE A

PUSH SET BUTTON

5. After reading is finished, press the MENU button to return to the MENU screen. Press the MENU button again to restore the normal screen.

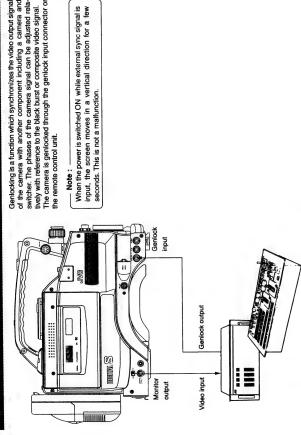
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-SET UP BOX OPERATE-

5

PUSH SET BUTTON

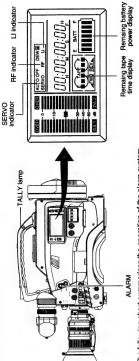
12-1 Connection with a Switcher



of the camera with another component including a camera and swirder. The phases of the camera signal can be adjusted relatively with reference to the black burst or composite video signal. The camera is genlocked through the genlock input connector or the remote control unit.

When the power is switched ON while external sync signal is input, the screen moves in a vertical direction for a few seconds. This is not a malfunction.

Note:



Phase Adjustment

Two phase controls are provided for use in adjusting the horizon-tal and the color phases.

He horizontal sync phase control for use in adjusting

video output signals are coincident in terms of the H phase so that the reference signal and the position and time on the screen

A rough adjustment of the sub carrier (SC) can be made while observing a vector scope. (0°,90°, SC COARSE

: A fine adjustment can be made. If sufficient adjustment cannot be made, switch the SC COARSE and try the SC FINE adjustment 180°, 270°)

SC FINE

The adjustments require the use of external measuring in-

As the signal phase is unstable for a moment after the power of each piece of equipment is turned on, wait a while before struments such as a waveform monitor, oscilloscope and vector scope.

CAUTION:

starting the phase adjustment.

1

SHUTTER FILE

PHASE controls

ton in the VCR playback signal that corresponds to the wow and flutter of the audio tape playback signal. If you should use the VCR playback signal as the reference signal, be sure to correct The camera cannot be genlocked with a VCR playback signal because this may cause a sync error or color phase variation. However, this is not a malfunction but due to the timebase variathe signal using a timebase corrector or similar equipment.

12-2 Trouble Shooting

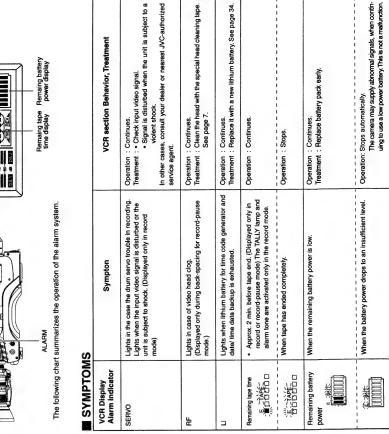
The unit provides warning on troubles in the operating situations using indicators, LCD displays and monitor tones

The warning consists of the following two kinds of information

 Alarm indications : These indications are given to provide warning on the VCR situation, for example when the tape or battery pack should be replaced.

diagnostics results on the counter display. At the same time as displaying an error code display, the VCR stops operation automatically or ejects the cassette tape. Error code display: In case an error occurs with the VCR operation, the unit applies self-diagnostics of the cases and shows the

- ALARM INDICATIONS



→ See page 1-24 "1.10 HOW TO DETECT THE ALARM".

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12-2 Trouble Shooting (Cont'd)

ALARM INDICATIONS (Con'd)

■The LCD Display, WARNING Indicator, TALLY Lamp, Alarm Tone and Viewfinder Act Depending on Situations as Shown in the Following Table.

		•				
A	Alarm Indications	ations			>	Viewfinder
LCD Display	WARNING	TALLY	Alarm Tone	Warning	Warning Lights	On Screen Display
	Indicator		•	REC Light	BATT Light	fadara nonco no
SERVO indicato	↔	₽		₩	1	VTR WARNING (SERVO)
RF indicator	*	*	***	₩		VTR WARNING (HEAD)
LI indicator	ı	1	ı			1
Remaining tape time	•		(In record mode)	•	1	TAPE NEAR END Approx. 3min. before tape end.
	•	1		↔		TAPE END
Remaining battery power	•	(Ex	(Except for play/search mode)		•	LOW BATTERY
	•	₽		↔	•	OW B

The alarm tone output is superimposed in the audio signal output from the monitoring loudspeaker or EARPHONE jack. The volume of the alarm tone can be adjusted with the ALARM control.

Display symbols : Steady lighting. (1): Blinking once per second. (8): Blinking 4 times per second.

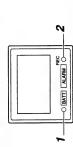
REC/ALARM light On screen Display PEC BATT ALARM O /iew finder BATT light.

12-2 Trouble Shooting (Cont'd)

12. OTHERS

WARNING MESSAGE ON VIEWFINDER

■ Viewfinder Warning Lights



1. BATTERY light

· This blinks red when battery voltage becomes too low for

the camera to operate.

This lights red when the battery has runout.

2. REC/ALARM light
This light shines for these conditions.

Solid Green :• While recording
Blinks Green :• While the VCR prerolls before recording
• If the tape is finishing.
• If the VCR mafunctions.

Automatic warnings:
LOW BATTERY: This binks when the battery level falls too low.
TAPE NEAR END: There are less than 3 minutes tape remaining.
TAPE END: The tape has run out.

■ Function Failures

When a trouble occurs on the VCR section or a mis-operation is performed, the following warning message will appear in the viewfinder.

VTR WARNING (HEAD) :

Lights in case of video head clog. (Displayed only during backspace for record-pause mode.) • VTR WARNING (SERVO):

Lights in case drum servo trouble in recording.

 VTR WARNING (DEW):

Lights when condensation occurs in the VCR section.

• VTR WARNING (HARD):
Lights when a trouble occurs in the VCR section.
For dealis of trouble, check the error code indication chart on page 88.

Lights when the VTR trigger button is pressed with an unrecordable cassette tape (with REC switch on the back of the cassette set to OFF) loaded.

NO TAPE:

Lights when the VTR trigger button is pressed with no cassette tape loaded.

Status 0 or 1 mode VTR WARNING (HEAD)

■ White Balance Function

: Check whether the object being shot is white enough. Check for AUTO WHITE A, B NG: OBJECT

: Check to see if the sun or other bright light is shining in the lens. Check that the IRIS is adjusted proper filter. AUTO WHITE A, B ERROR: OVER LIGHT

: Check to see if increasing gain or lighting will help. AUTO WHITE A, B ERROR: LOW LIGHT

AUTO WHITE A

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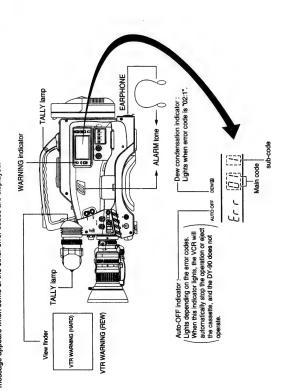
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12. OTHERS

12-2 Trouble Shooting (Cont'd)

IROUBLES WITH ERROR CODE OUTPUTS

In case of trouble during the operation of the VCR, it applies self-diagnostics to identify the cause and displays the result in the form of an error code. The error code consists of the "main code" which indicates its contents and the "sub-code" which indicates the details. At this time, the LCD display, the WARHINIG indicator and alarm tone also act according to the current VTR situation. In the viewfinder, the "VTR MARNINIG (DEW)" message appears when condensation occurs (error code 02:01), and the "VTR WARNINIG (HARD)" message appears when some of the other error codes are displayed.



WARNING indicator Alarm Tone	Alarm Tone	Display	VCR Operation
Red blinking	Continuous	"Error code"	"Error code" • Automatically ejects the cassette. It can be inserted again.
		"Error code" plus "AUTO OFF"	 Automatically stops operation or ejects the cassette. (Auto OFF*). "VTR WARNING (HARD)" is displayed on the viewfinder screen. The VCR does not accept any operation.
Red, steady lighting	Intermittent	"02:1" and "DEW ● "	 Dew is condensed in the VCR. VTR WARNING (DEW)[*] is displayed on the viewfinder screen. The VCR does not accept operation until indicators disappear from the display.

★ In the Auto OFF status, it is impossible to operate the VCR. This condition can be corrected by switching the POWER off and then switching it ON again. If the same trouble occurs again after the power is turned ON, there may be a failure in the VCR. Please consult your dealer or nearest JVC-authorized service agent.

This unit is microcomputer-controlled equipment, which may malfunction due to external noise or interference. In this case, switch the POWER OFF, remove the lithium backup battery, and switch the POWER ON again after a few minutes.

12. OTHERS

12-2 Trouble Shooting (Cont'd)

TROUBLES WITH ERROR CODE OUTPUTS

Error Code	Error Details	VCR Operation	Treatment	
01:1	Tape sensor LED wire is disconnected	Ejects cassette and does not accept any operation while the error is displayed.	Switch power ON again.	
02:1	Condensation (dewing)	Does not accept any operation while the error is displayed. When condensation disappears, the indicators turn off.	Leave the unit with the power ON, until "DEW" display disappears.	
32:1 32:2	Tape loading impossible.	Ejects cassette	Insert cassette again.	
33:1 (AUTO OFF)	Tape unloading impossible.	Stops operation. Does not accept any operation.	Switch the power OFF and then switch it back ON. However, the tape may be damaged depending on the situation. So consult with the JVC authorized service agent.	
56:3 to 56:8	Tape is cut or tape is slack.	Ejects cassette.	Check cassette and insert again if it is OK.	
57:1 to 57:4	Tape end sensor error.	Rewinds tape to confirm. If tape end is detected again, ejects the cassette.	Check cassette and insert again if it is OK.	
58:1 to 58:4	Tape beginning sensor error.	Fast forwards tape to confirm. If tape beginning is detected again, ejects the cassette.	Check cassette and insert again if it is OK.	
70:1 (AUTO OFF)	Drum rotation stopped.	Stops operation. Does not accept any operation.	Switch the power OFF and then switch it back ON. However, the tape may be damaged departed for the structure of the structure	
71:1 (AUTO OFF)	Capstan rotation stopped.	Stops operation. Does not accept any operation.	departming on the students. So consult with the JVC authorized service agent.	
72:1 to 72:5 (AUTO OFF)	Supply reel rotation error.	Stops operation. Does not accept any operation.		
72:7	Supply reel rotation error due to tightly wound tape.	Ejects cassette.	Check cassette and insert again if it is OK.	
73:1 to 73:4 (AUTO OFF)	Take up reel rotation error.	Stops operation. Does not accept any operation.	Switch the power OFF and then switch it back ON. However, the tape may be damaged depending on the situation. So consult with the JVC authorized service agent.	
73:7	Take up reel rotation error due to tightly wound tape.	Ejects cassette.	Check cassette and insert again if it is OK.	

See page 1-25 "1.11 ERROR CODES".

12. OTHERS

12-2 Trouble Shooting (Cont'd)

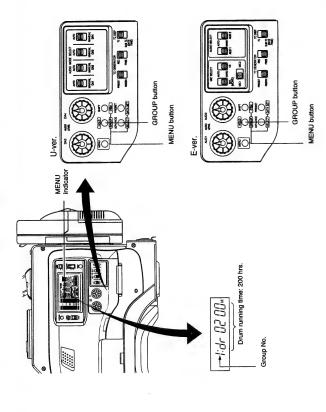
TROUBLES WITHOUT ERROR CODE OUTPUTS

Symptoms	Check points
Power cannot be switched ON.	 Is power supply connected properly? Is battery pack recharged? When the lithium battery is depleted, the power should not be turned on.
Recording is not possible.	• Is REC switch of cassette set it to ON? If it is OFF, set to ON.
Cassette is ejected.	 Is the cassette in use a DIGITAL S cassette? VHS or S-VHS cassettes are ejected whenever they are inserted.
Noise interferes with playback video.	 Video head may be clogged with dirt. Clean head with the special head cleaning tape. See page 7.
Time code or date/ time data are not displayed on the monitor screen.	 Time code and date/fime data are not displayed on the monitor screen during recording or playback of VCR. The data is shown only on the counter display.
Time code and user's bit data are not displayed on the counter.	• Is TC DISP switch under the side panel cover set to SUB TC? If it is, set the switch to TC.
Remaining battery power display is incorrect.	 The setup menu item "BATT. TYPE SELECT" may not be set correctly according to the type of battery in use. If the menu item setting is wrong, set it correctly by opening setup menu item "BATT. TYPE SELECT.
Battery alarm is displayed and VCR enters OPERATE OFF mode even when a fully charged battery is used.	
Cassette can not eject after the power is turned on.	 The power supply unit's capacity may be insufficient. Check the power voltage. If the power is turned off within 1 second of opening the cassette holder, the cassette holder may not close properly.
Viewfinder image looks dark or unclear.	Adjust the contrast control. Is the filter switch set to 5600K+ND? Is the first closed? Is the hist expeed too fast? Is the viewfinder cable correctly connected?
Noise appears when playing back a tape recorded with another VCR.	 When the tape recorded on another VCR is played back or used for recording, this phenomenon may occur caused by the tracking shift.
The scene change section is disordered when a lape recorded with another VCR is used.	
VCR section does not operate after loading the cassette.	 Does the cassette indication ((CD) in the display light? When the cassette indication is not fit, the cassette cover is in the half-lock condition. Push the cassette cover to the end to securely lock the cassette.
MIC1 or MIC2 sound is not input. (E-ver. only)	Using the [MIC14MIC2] microphone select switch, select the mic input to be used.
A recording check is not possible with the viewfinder or monitor in the record-pause mode.	Is the [CAMVTR] switch set to the CAM position? If so, set it to the VTR position.
Playback image is not output.	

12. OTHERS

12-3 Hour Meter Display

The unit can display the running time of the drum as the hour meter data on the counter display. The hour meter can be displayed by selecting setup menu Group 1.



Turn the POWER switch to ON.

2. Press the MENU button to enter the setup menu mode. The MENU indicator lights on the display and the setup menu is shown on the counter display.

3, Press the GROUP button to display setup menu Group 1. → The drum operating hour data is shown on the counter display.

4. Press the MENU button to return to the normal mode.

→ See page 1-12 "1.9.1 Structure of DIAG mode".

12. OTHERS

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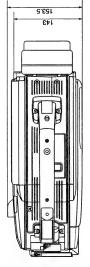
· CAMERA SECTION		 INPUT/OUTPUT SIGNALS 	S
Image pickup device	: 2/3-inch interline CCDs	Video signal output	: 1 V (p-p), 75 Ω (BNC) (Composite vid-
Color separation optical system	: 3-color separation prism		eo signal)
Number of effective pixels	Number of effective pixels : 380,000 pixels (768 (H) \times 493 (V)) : U-ver.	Lens	: 12-pin connector
	440,000 pixels (754 (H) × 581 (V)) : E-ver.	DA4 (MIC 1) input	: -52 dBs, unbalanced, 6-pin
Color system	: NTSC (R-Y, B-Y encoder) : U-ver.	DA2 (MIC) input	: -60 dBs, balanced, +48 V XLR-3-pin
	PAL (R-Y, B-Y encoder) : E-ver.	DA1/DA3 input	: +4 dBs/10 kΩ (select the switch)
Color bars	: SMPTE color bar : U-ver.		—60 dBs/3 kΩ (select the switch)
	EBU colour bar : E-ver.		+48 V (ON/OFF switch)
Sync system	: Internal sync		(XLR3), balanced
	External sync (VBS or BB)	Audio output	: 0 dBs, low impedance,
l eps molipt	Bayonet system (FB 48.0 mm, 2/3" CCD		(XLR5), balanced
	cameras)	Earphone output	: -60 to -17 dBs, at 8 \Omega load
Optical filter	· 3200 K 5600 K 5600 K + 1/16ND.	DC input	: 12 VDC::: (11 to 15 VDC:::)
Opingal IIIIgi	3200 K + Ffect (cross) filter : U-ver.	Auxiliary power output	: 12VDC::::max.0.1A (11 to 15 VDC:::)
	3200 K, 5600 K, 5600 K + 1/4ND,		
	5600 K + 1/16ND : E-ver.		
Sensitivity	: F11, 2000 lx	• GENERAL	
Gain	-3 0 6 9 12 18 dB LOLUX, ALC	Power consumption	: 34W with VF-P116 (Max)
Minimum illumination	. 4 ly with F1 4 +18 dB gain		30W with VF-P115 or VF-P116 (when
INTERIOR MODELLA	0 46 12 mith 54 A		recording) : U-ver.
Loux minimum inumination	. U./ U. IX Will I I I.4		12VDC == 2 8A with VF-P116 (Max)
Registration	: 0.05% or less (excluding lens distortion)		12 VDC - 2.05 mill VI 110 (mix)
Contour correction	: Horizontal dual-edged, Vertical 2 H		TA VDC Z.43A WILL VI-F I I S OI VI-
Shutter speed	: 100 (U-ver.), 120 (E-ver.), 250, 500,		P116 (when recording) : E-ver.
	1000, 2000 Hz	Mass	Approx. 6.9 kg [with VF-P115, A18 X
V.SCAN speed	: 60.5 Hz to 1966.7 Hz : U-ver.		9B12, Flat shape type lithium ion bat-
	50.4 Hz to 1953.1 Hz : E-ver.	Operating temperatures	tery, accessory interprioriej
		Operating femperatures	: 30 % to 80 % RH
• VCR SECTION		Storage temperatures	: -20 °C to 60 °C
Format	: DIGITAL S		
Tape width	: 12.65 mm	9110000100+	
Tape speed	: 57.737 mm/sec : U-ver.	• Accessonies	
	57.795 mm/sec : E-ver.	Microphone (Monaural)	×
Record/Play time	: 104 minutes (With a DS-104 cassette)	Tripod base	×
F.F/rewind time	: Approx. 4 minutes (With a DS-64)	Set up box	:×1
		Lithum battery	: × 1 (Ch2032)
[VIDEO]			
Frequency response	R-Y/B-Y: 0 to 2:0 MHz		
Sampling frequencies	: Y : 13.5 MHz		
100	2 mi C . O . 1 - 0		
Quantization S/N	: More than 52 dB (during BR-D80/D50		
	reproduction with component output)		

12-5 Specifications (Cont'd)

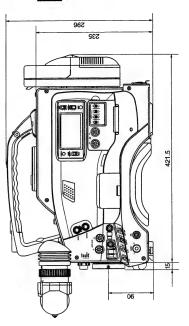
OPTIONAL ACCESSORIES

: VF-P115, VF-P116 : A18 × 9B12, YJ18 × 9BK12 : A4-P250, A4-G10 : NB-G1 (12 V, 2.2 AH) : MV-P615, MV-P612 : K4-A90 Power zoom lens AC power adapter DC battery pack Microphone Mic holder Viewfinder

EXTERNAL DIMENSIONS (unit: mm)







Design and specifications are subject to change without notice.

91

: Compliance with SMPTE standard : U-ver. Compliance with EBU standard : E-ver. : 0 ± 6dBs, high impedance, unbalanced : 0 ± 6dBs, low impedance, unbalanced

[Time Code System] Time code signal

LTC input LTC output

: 20 Hz to 20 kHz (PCM) : More than 85 dB (PCM) (during BR-D80/D50 reproduction) : Below measurable limit

Dynamic range Quantization

Wow & flutter

Number of channels for recording: PCM × 4, cue track × 2 Sampling frequency : 48 kHz

Sampling frequency Frequency response

SECTION 1 SERVICE CAUTIONS AND DISASSEMBLY

1.1 REPLACEMENT OF FUSE

Before replacing fuse, make sure to investigate the reason why it blew out and to remove cause of the failure first in order to prevent trouble from spreading.

CAUTION: -

FOR PROTECTION AND SAFETY IN OPERATION, FUSE SHOULD BE REPLACED ONLY BY THE ONES WITH RECOM-MENDED PARTS NOs.

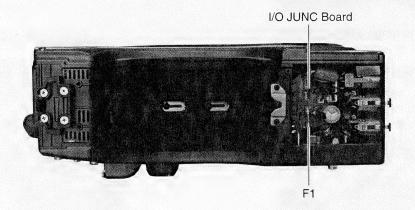


Fig. 1-1 Fuse circuit protectors layout diagram

Board names	Symbol No.	Symptoms in disconnection	Parts No.
I/O JUNC	F1	Power cannot be turned on. (No power is supplied the set.)	QMF51U1-4R0-S : for U-ver. QMF51A2-4R0-S : for E-ver.

1.2 HOW TO REMOVE THE OUTER CASE

1.2.1 How to remove the cassette cover

- (1) Remove two screws 1.
- (2) Slide the cassette cover in the arrow direction in order to remove it.

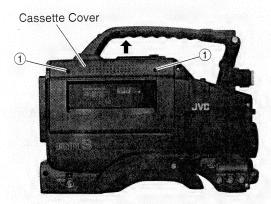


Fig. 1-2-1 How to remove cassette cover

1.2.2 How to remove the left side cover

- (1) Remove the cassette cover.(refer to the subsection 1.2.1)
- (2) Loosen the screw 2 to remove the set up box.
- (3) Loosen the five screws 3 to remove the left side cover.

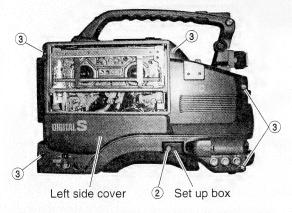


Fig.1-2-2 (1) How to remove the left side cover

(4) Disconnect the connector (A).

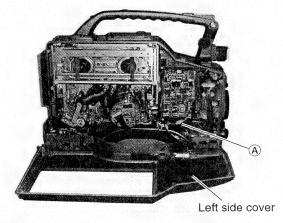


Fig.1-2-2 (2) How to remove the left side cover

1.2.3 How to open the right side cover

(1) Loosen the five screws 4.

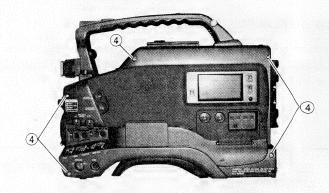


Fig.1-2-3 (1) How to open the right side cover.

(2) Open the right side cover towards the front.

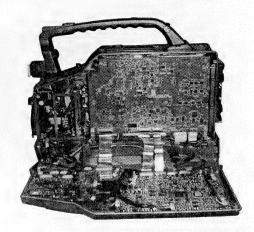


Fig.1-2-3 (2) Diagram with the right side cover open

1.2.4 How to remove the bottom cover

(1) Remove the four screws (5) to remove the bottom cover.

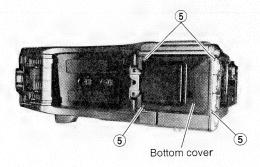
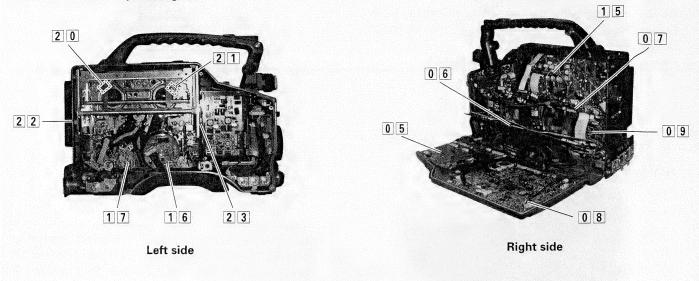
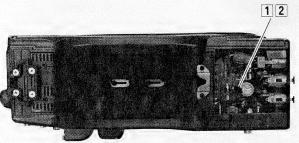


Fig.1-2-4 How to remove the bottom cover

1.3 HOW TO MAKE A DIAGNOSTICS OF THE BOARD

1.3.1 Main board layout diagram





Bottom side (connector box)

Board name	Board layout position	Remarks	
01 DR	Camera Head	Section 1.5.1	
020304 ISB/G/R		A los organismos and a company of the company of th	
05 CP	On the right side cover	Section 1.5.2	
08 AUDIO/LCD		Section 1.6.1	
O 6 MAIN	On the side of right side cover	Section 1.6.2	
07 SS/RFP		Section 1.6.3	
09 PR		Section 1.6.4	
14 OPERATION			
15 MEC/IF			
16 MDA	On the side of the left side cover		
17 A/C HEAD			
18 MODE SENS			
19 AL SENS			
20 TU REEL FG			
21 SP REEL FG			
22 BEGIN SENS			
23 END SENS			
12 I/O JUNC	Inside the connector box	Section 1.6.4	

Fig.1-3-1 Main Board layout diagram

1.4 REMOVING THE OPTICAL FILTER ASSEMBLY AND OPTICAL BLOCK ASSEMBLY

- (1) Remove the right side cover (refer to the subsection 1.2.3)
- (2) Loosen two screws (6) and two screws (7) then lift up the handle.
- (3) Remove the four screws (8) from the front panel.

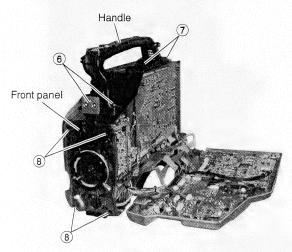


Fig. 1-4-1

(4) Pull out the optical block assembly together with the front panel gently toward the front.

- NOTE -

Be very careful not to scratch or damage the circuit boards and flat cables.

- (5) Loosen the two screws 9.
- (6) Take out the optical filter assembly in the direction of the arrow.

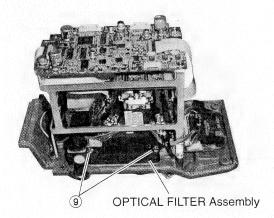


Fig. 1-4-2

- (7) Disconnect the three connectors (B), (C) and (D) direction in order to remove the flexible wires.
- (8) Remove the four screws (10) then remove the DR board.

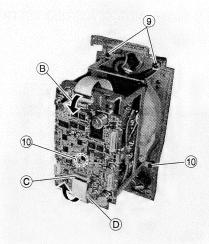


Fig. 1-4-3

 Usually, the optical filter assembly does not need to be removed. However, when it is removed then attached, observe the position relationship between the filters and filter shaft as shown in Fig. 1-4-4.

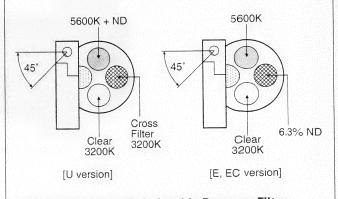


Fig. 1-4-4 Position Relationship Between Filters and Filter Shaft

(9) Remove the four screws (1) from the front panel, and separate the front panel from the optical block assembly.

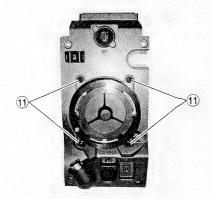


Fig. 1-4-5

NOTES

- The CCDs are precision-fixed on the prisms. Therefore, even if a CCD fails, it is not possible to replace the deffective CCD alone. The entire optical block assembly should be replaced in such a case.
- The optical block assembly (SCM0986-N0A[NTSC]/ SCM0986-P0A[PAL]) provided as a service part is not equipped the DR board. When replacing the assembly, attach the circuit boards and the bracket to the new optical block assembly before mounting it in the camera head.

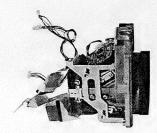


Fig. 1-4-6 Optical Block Assembly

NOTE

When re-assembling the optical block assembly to the body, make sure that do not injure each wire assembly. Otherwise, it may cause a machine trouble.

1.5 DISASSEMBLY OF THE EACH BOARDS IN CAMERA PART

1.5.1 Disassembly of DR board

- (1) Remove the right side cover. (refer to the subsection 1.2.3)
- (2) Remove the 4 screws from the front panel. (refer to the subsection 1.4)
- (3) Draw out the optical block assembly front wards together with front frame.
- (4) Disconnect the three connectors (B), (C) and (D) direction in order to remove the flexible wires.
- (5) Remove the four screws 10 then remove the DR board.

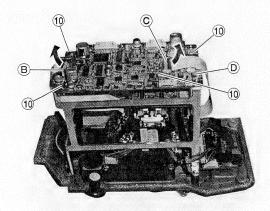


Fig.1-5-1

1.5.2 Disassembly of the CP board

- (1) Open the right side cover. (refer to the subsection 1.2.3)
- (2) Remove the five screws 12.
- (3) Lift the CP board up.

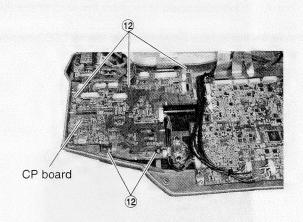


Fig. 1-5-2

1.5.3 Disassembly of the PS board

- (1) Remove two screws and remove the cassette cover.(refer to subsection 1.2.1)
- (2) Remove the left side cover .(refer to the subsection 1.2.2).
- (3) Remove two screws (3) then remove the PS board.

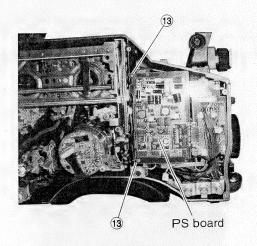


Fig. 1-5-3

1.6 DISASSEMBLY OF THE EACH BOARD IN THE VTR PART

1.6.1 Disassembly of an AUDIO & LCD board

- (1) Open the right side cover.(refer to the subsection 1.2.3)
 The AUDIO & LCD board is fixed on the back of the right side cover.
- (2) Remove five screws (4) and then AUDIO & LCD board can be removed.

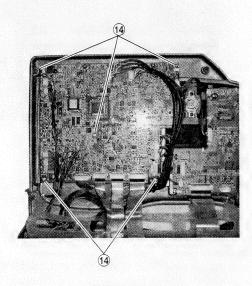


Fig. 1-6-1 (1)

(3) As shown in the Fig. 1-6-1(2), while the AUDIO & LCD board is standing, the diagnosis is possible.

Caution: If the connector is removed from lithium battery, all memory in LCD CPU will be clear. Refer to section 1.13 for more details.

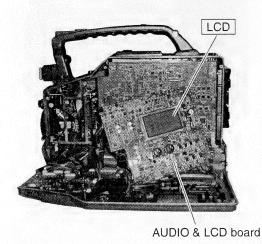


Fig. 1-6-1 (2)

1.6.2 Disassembly of the MAIN board

- (1) Open the right side cover. (refer to the subsection 1.2.3)
- (2) Remove the two screws (3) and put the MAIN board down in front of you.

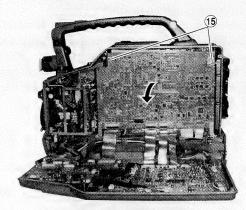


Fig. 1-6-2

1.6.3 Disassembly of the SS/RFP board

- (1) Open the right side cover. (refer to the subsection 1.2.3)
- (2) Remove the two screws and put the MAIN board down in front of you. (refer to the subsection 1.6.2)
- (3) Remove the two screws (6) and put the SS/RFP board down in front of you.

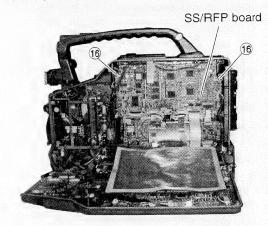


Fig. 1-6-3 (1)

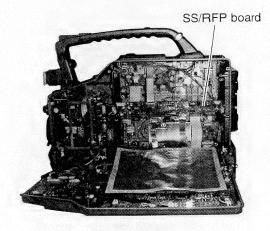
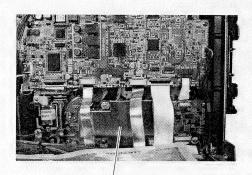


Fig. 1-6-3 (2)

1.6.4 Disassembly of PR board

- (1) Open the right side cover. (refer to the subsection 1.2.3)
- (2) Remove the two screws and put the MAIN board down in front of you. (refer to the subsection 1.6.2)



Shield cover

Fig 1-6-4 (1)

(3) Remove the four screws ①, then PR board can be removed.

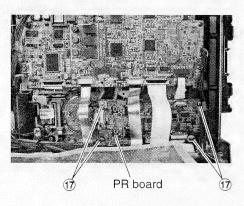


Fig 1-6-4 (2)

1.6.5 Disassembly for diagnosis of the back side of the main deck

- (1) Remove the two screws and put the SS/RFP board. (refer to the subsection 1.6.3)
- (2) Remove the two screws and put the PR board . (refer to subsection 1.6.4)
 - \rightarrow Diagnosis of the back side of the main deck.

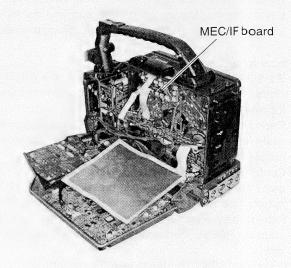


Fig. 1-6-5

1.6.6 Disassembly the I/O JUNC board

- (1) Remove the bottom cover. (refer to the subsection 1.2.4)
- (2) Remove the four screws (8) and then I/O JUNC board can be removed.

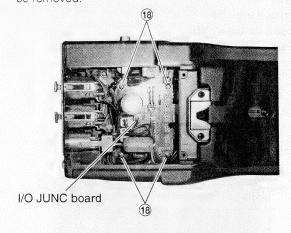


Fig. 1-6-6

1.7 HOW TO TAKE A CASSETTE OUT IN AN EMERGENCY

In case a cassette cannot be ejected because of malfunctions of the motor and mechanism systems, or any tape slack occurs, follow the procedure explained below to take the cassette out.

- (1) Remove the left side cover. (Refer to the subsection 1.2.2)
- (2) While observing the condition of the tape and mechanism, take the cassette out using one of the following procedures.
- How to wind a slack tape
 If a slack tape occurs when the unit is in the AUTO OFF mode, the tape should be wound with the emergency role function.
- (1) Press the "STOP" and the "OPERATE" buttons simultaneously for three sec. or more in the AUTO OFF mode or immediately after the power is turned on.
- (2) Confirm that the LCD counter displays " 63:P .00 00", then press the "REW" button while pressing the "OPERATE" button. (The supply reel winds the tape for approx. 80 ms.)
- (3) Repeat the procedure (2) to wind up the tape slack, then press the "MENU" button to cancel the emergency role function.
- (4) Press the "EJECT" button to take the cassette out.
- How to take a cassette out manually
 If the emergency role function does not operate because of
 a malfunction of the reel motor, or the unloading does not
 operate because of a malfunction of the loading motor, fol low the procedure explained below to take a cassette out.
- (1) Take out the SS/RFP board and the PR board. (Refer to the subsection 1.6.3 and 1.6.4)
- (2) Remove the screw ① and the spring hook ② in order to loosen the timing belt.
- (3) Take the timing belt out at the mode motor side.

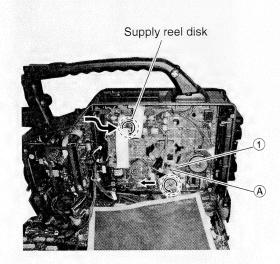


Fig. 1-7 How to take a cassette out manually

- (4) Turning the timing belt in the direction shown in the Fig. 1-7 allows performing of the unloading and eject functions. Any tape slack occurring with this procedure should be wound by inserting a finger from the direction shown with an arrow in the diagram in order to turn the supply reel disk.
 - * Refer to subsection 2.7.12 for instructions on installing the timing belt.

1.8 FUNCTIONS OF INTERNAL SWITCHES

Internal switches are as follows.

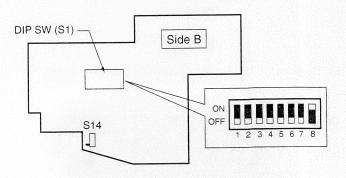


Fig. 1-8-(1) Switches on the CP board

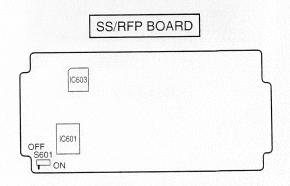


Fig. 1-8-(2) Switch on the SS/RFP board

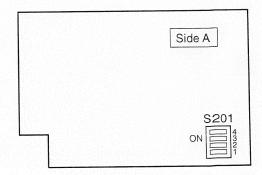


Fig. 1-8-(3) Switch on the MAIN board

1.8.1 Dip switch S1 on the CP board have the functions as described below.

Symbol	No.	Switch Name	Function	Initial
S1	1 2 3 4 5 6 7	Adjustment mode Check mode Shading correction Not use Not use Color MATRIX setting Setup Function setting	Adjustment mode ON/OFF Check mode ON/OFF Shading correction ON/OFF Color MATRIX setting mode ON/OFF ON (0% Setup)/OFF (7.5% setup) : NTSC Do not care (0% setup) :PAL Initial setting of camera's function	OFF OFF OFF (Activated) OFF OFF OFF OFF Refer to table 1-8-3

Table 1-8-1

· Adjustment mode (S1-1)

Setting S1-1 to ON initiates the adjustment mode. For details of this mode, please read section "3.2.7 Adjustment procedure in the adjustment mode".

· Check mode (S1-2)

Setting S1-2 to ON initiates the check mode.

This mode is used to display the auto white balance and auto iris data which stored in CPU on the viewfinder screen. It will be able to display on the monitor screen, too. (Refer to the "3.2.6 Simultaneous display in both viewfinder and monitor")

(This mode do not use for adjustment)

— CHECK MODE —		
R-G	: *	
B-G	: *	
R GAIN LEVEL	:*	
B GAIN LEVEL	: *	
PEAK	: *	
APL	: *	
NAM ERROR	: *	
GAIN *dB	: *	

R-G/B-G

This shows the R,G,B signal input to the CPU to control white balance with R-G and B-G.

R GAIN LEVEL / B GAIN LEVEL

These two items of data show the control signal level for a white balance of R and B channels.

PEAK

This data shoes the peak-hold value of the signal in 1 vertical scanning period.

APL

This data shows the average value of video signal level.

NAM ERROR

This data shows the NAM value for use in the auto iris control.

GAIN

This data shows the GAIN value that is set by the [GAIN] switch located on the right side of the main unit. When the full automatic shooting mode is operated, "ALC" is shown.

Shading (S1-3)

Setting S1-3 to ON / OFF allows to select whether the camera output signal is to be with Shading correction or not.

Setting	Function	Initial Setting
OFF	Shading correction is activated.	OFF
ON	Shading correction is inactivated.	011

Table 1-8-2

- NOTE -

When shading correction is activated, vartical lines might be appeared on monitor screen.

· Color MATRIX setting (S1-6)

Setting S1-1 to ON initiates the color Matrix setting mode. For details of this mode, please read section "1.15". (This adjustment is usually not necessary to be done. Perform it only when it is required to do so, as the customer want to do special setting.)

• Setup(S1-7 : Only for NTSC model)

Setting S1-7 to ON/OFF allows to select whether the camera out signal is to be with setup or not. The factor setting is OFF for with the no setup. The signal level does not change by changing the position of this switch.(Adjustment after switching is not necessary).

Function setting (S1-8)

The initial setting described in table 1-8-3 and 1-8-4 will be switched according to the setting of S1-8.

S1-8	NTSC *	PAL *
ON	U version	E version
OFF	Japan version	EC version ** [E(x) version]

Table 1-8-3

- Automatically selected for NTSC or PAL by HD frequency.
- ** EC [E(x)] version means CHINA market version.
 Please refer to section.

Function OFF			S1-8	
		NTSC		PAL
		OFF	ON	Do not care
	L	0 dB	0 dB	0 dB
GAIN	М	6 dB	9 dB	9 dB
	Н	9 dB	18 dB	18 dB
V. SCA	N	60.5 – 249.7	60.5 - 1966.7	50.4 - 1953.1
ALC G	AIN	0 to +12 dB	0 to +18 dB	0 to +18 dB
EEI		1/60 to 1/240	1/60 to 1/240	1/50 to 1/200

Table 1-8-4

The GAIN switch can be set with the [ADVANCED MENU].

1.8.2 Internal switch on CP board (S14)

This switch is used to cut for the communication from CPU to VTR SS/RFP board.

Setting	Function	Initial Setting
VTR	Communicate for VTR SS/RFP board.	
RS-232C	Do not communicate for VTR SS/RFP board and can be communicated for others.	VTR

Table 1-8-5

1.8.3 Internal switch on SS/RFP board (S601)

This switch is used to select the warning cancellation.

Setting	Function	Initial Setting
OFF	The warning detection circuit works.	OFF
ON	(1) It does not enter the warning mode (excluding alarm display).(2) Mechanism operation is available without an AV micro computer (MAIN board).	

Table 1-8-6

NOTE

This switch has to be OFF except when warning occurrence requires analysis.

1.8.4 Internal switch on MAIN board (S201)

This switch is to be used to adjust for the DRUM'S charactristic. (refer to subsection 2.5.2)

1.8.5 EEPROM (Camera)

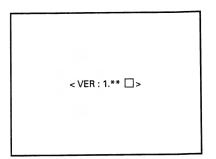
IC9 on the CP board is an EEPROM (electrically erasable and programmable read-only memory), serving to store the data as below.

If the EEPROM fails and has to be replaced, set the data as below.

- Adjusted value with [ADJUSTMENT MODE]
- Setting details for [MAIN MENU] and [ADVANCED MENU]
- · Address data of blemish position
- Auto white balance data (AW1/AW2)
- V-SUB voltage data

1.8.6 Displaying version numbers of the ROMs

When the power is switched ON by the [OPERATE] switch while also pressing the [MENU] button, the version number of the ROM (IC4 on the CP board) is indicated on the view finder screen for 1 second.



☐ mark	Meaning	
U	U version	(NTSC)
E	E version	(PAL)
С	EC [E(x)] version	(PAL)
	Japan version	(NTSC)

- NOTE -

If the ROM (IC4 on the CP board) is replaced, SYSTEM RESET is required. (refer to the subsection 1.8.7.)

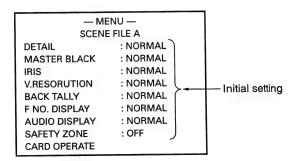
1.8.7 SYSTEM RESET

When the power is switched ON by the [OPERATE] switch while also pressing the [SET] button, the system is reset and data set at MENU screen returns to the initial setting.

The items to be initialized with the system reset are shown below

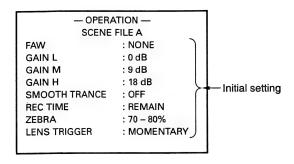
<ltems which are set to be initialized>

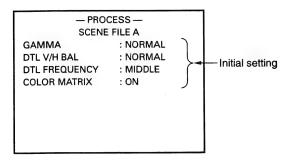
Setting data of [MAIN MENU]



• [ADVANCED MENU] screen

The details for FILE A and FILE B set at the [SCENE FILE] which will be initialized.





· Other initial setting

Functions	Initial setting values
SHUTTER	NTSC 1/100
V. SCAN	PAL 1/120 NTSC 1/100.2 PAL 1/120.1
STATUS	STT 0
LOLUX FULL AUTO	OFF
W. BAL A	R ch · 84
W. BAL B	B ch 156 R ch 84 B ch 156

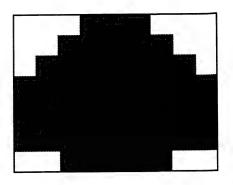
Table 1-8-7

<ltems of which the setting will not be initialized>

- Setting date for [ADJUSTMENT MODE] and [SERVICE MENU].
- Setting for mechanical switches.

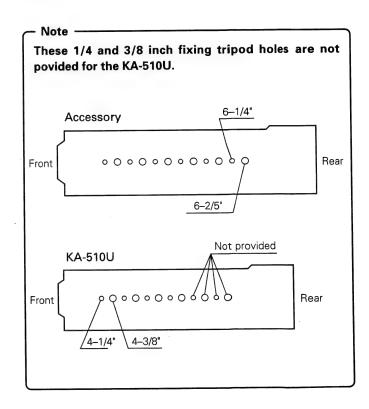
1.8.8 Detect area of Auto Iris

The exposure detection system used for the Auto Iris is based on a zone pattern that assigns a priority according to the probable important subject area.



1.8.9 Tripod base

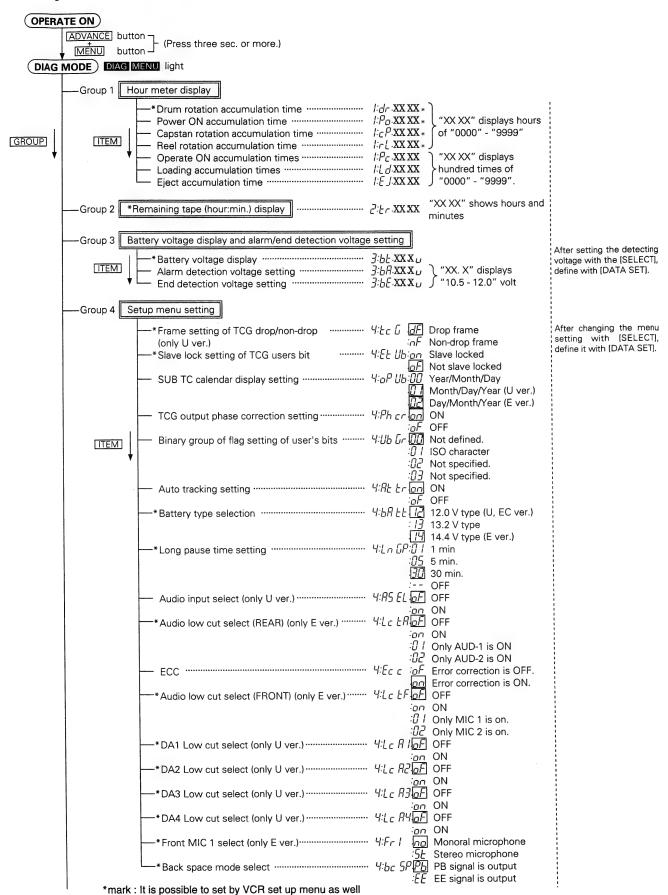
See the KA-510U service manual No. 60065 for servicing. The tripod is not exactly same as KA-510U. See note for the difference.



1.9 DIAG MODE

1.9.1 Structure of DIAG mode

DIAG (diagnostics) mode is used for service operation. There are nine groups as shown in the Fig. 1-9-1.



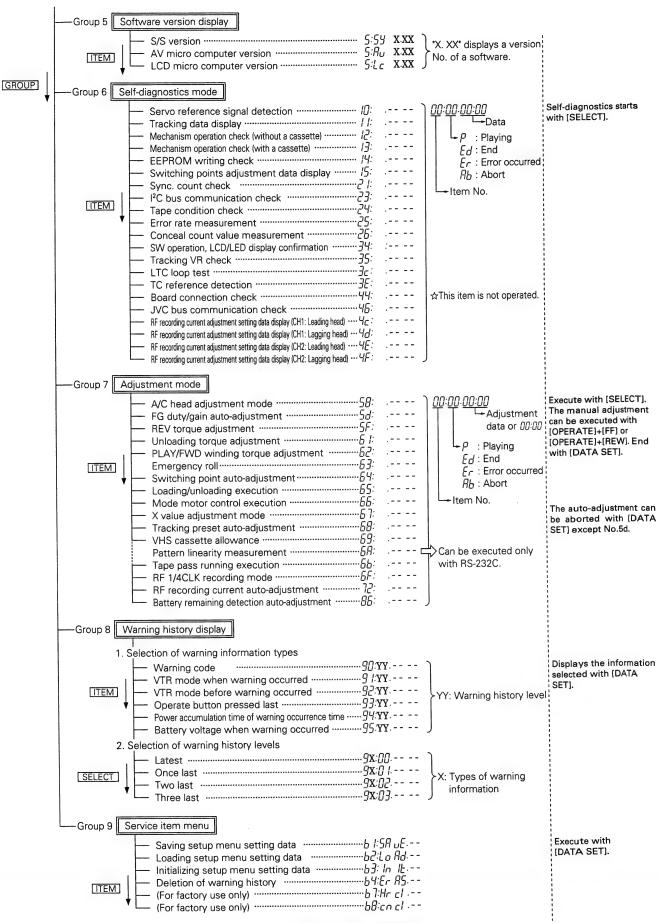


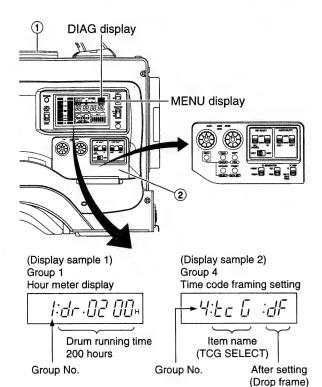
Fig. 1-9-1 DIAG MODE

1.9.2 How To Select Items

- (1) Set the [POWER SW] to ON, then open the operation cover (1).
- (2) Initiate DIAG mode.

Open the door ② at the TIME CODE/SETUP MENU setting section, then hold the [MENU] button for three sec. or more while pressing the [ADVANCE] button.

→ [MENU] and [DIAG] display light on the display and the DIAG menu appears on the counter display.



(3) Select a group.

Switch the group display of the counter display by pressing the [GROUP] button.

[Group No. display]

Group 1:"1" — Hour meter display and individual reset (7 items. See Fig. 1.9.1.)

Group 2: "2"— Remaining tape (hour:min.) display (1 item. See Fig. 1.9.1.)

Group 3: "3" — Battery voltage display and alarm/end detection voltage setting
(3 items. See Fig. 1.9.4.)

Group 4: "4" — Setup menu setting (12 items. See 1.9.5.)

Group 5: "5" — Software version display (3 items. See 1.9.6.)

Group 6: "10" - "4F" — Self-diagnosis mode (21 items. See 1.9.7.)

Group 7: "58" - "86" — Adjustment mode (17 items. See 1.9.8.)

Group 8: "9 " — Warning history display (6 items. See 1.9.9.)

Group 9: "b " — Service item menu (6 items. See 1.9.10)

(4) Select the item in the group.

Pressing the [ITEM] button allows display of the desired item on the counter display.

1.9.3 How to end the DIAG mode

Pressing the [MENU] button to clear the DIAG mode.

1.9.4 How to set the battery alarm/end detection voltage setting (Group 3)

Alarm/end detection voltage setting can be set with the voltage values while 12 V battery is used. Which means that the alarm/end is detected at a voltage with 1.1 times the display voltage with a 13.2 V battery and 1.2 times with a 14.4 V battery.

Example) Setting with 10.5 V: 13.2 V type \rightarrow 10.5 x 1.1 =11.6 V 14.4 V type \rightarrow 10.5 x 1.2 = 12.6 V

[How to operate]

- (1) Initiate the DIAG mode and display the following items. (See the section 1.9.2.)
- · Alarm detection voltage display

• End detection voltage display

- (2) Set the detection voltage by pressing the [SELECT] button.
- → Display data blinks. The display data increase every 0.1 V each time the [SELECT] button is pressed.
- → While the display data is blinking, pressing the [MENU] button allows display of the "Abort" sign for approx. two sec., then the DIAG mode ends without saving the data.

- (3) Press the [DATA SET] button.
- → The setting data is saved in the EEPROM. During saving, the SAVE display appears for one sec.approx.

If the alarm detection voltage is set lower than the end detection voltage, the alarm display occurs when the battery voltage falls to the alarm detection voltage. End display appears in several seconds regardless of the end detection voltage.

1.9.5 How to set the setup menu (Group 4)

With a setup menu setting of DIAG mode, menu settings for both users and services are available.

- (1) Initiate the DIAG mode and select the setup menu item. (See the section 1.9.2.)
- (2) Select the setting values with the [SELECT] button.
- (3) Press the [DATA SET] button.
- → The setting data is saved in the EEPROM. During saving, the SAVE display appears for one sec.approx.

Menu names	Counter displays	Details
TCG DROP/NON-DROP (only U version)	4:Ec [; :dF :nF	Menu for users (See page 64 of the instruction manual.)
U-BIT SLAVE ON/OFF	4:Et Ubion iof	Menu for users (See page 64 of the instruction manual.)
SUB TC DATE STYLE	4:6P Ub:00 :0 I :02	Selection of the data order of the SUB TC U-BIT (Year/Month/Day calendar) 00: Year/Month/Day 01: Month/Day/Year 02: Day/Month/Year
PHASE CORRECTION	4:Ph cr:on :oF	Selection whether to execute the phase compensation of TC OUT terminal output on: Execute the phase compensation oF: Not execute the phase compensation
U-BIT BINARY GROUP FLAG	4:U6 Gr:00 :0 I :02 :03	Setting of the binary group flag of the user's bits 00: Not appointed as character sets 01: ISO character 02/03: Not specified
AUTO TRACKING	4:AL Er:on :oF	Selection whether to operate the auto tracking during the PLAY mode. on: Operate oF: Not operate. At this time, the tracking VR inside the connector box is effective.
BATT. TYPE SELECT	4:68 EE: 12 : 13 : 14	Menu for users (See page 64 of the Instruction manual.)
LONG PAUSE TIME	4:Ln GP:0 1 :05 :30 :	"" (prohibition of long pause) cannot be set at the menu for users (see page 64 of the Instruction manual).
AUDIO INPUT SELECT (only U version)	4:AS EL:oF :on	Selection for factory use oF: Normal mode on: Factory use mode AUD1 MIC2 AUD2 MIC1 AUD1 AUD2 MIC1 AUD1 MIC2
AUDIO LOW CUT SELECT (REAR) (only E version)	4:Lc EA:oF :on :01 :02	Menu for users (See page 64 of the Instruction manual.)
ECC	4:Ec c ion ioF	ON/OFF of the cancellation circuit of the error compensation on: Compensation errors. oF: Non compensation errors.
AUDIO LOW CUT SELECT (FRONT MIC) (only E version)	4:Lc EF:oF :on :01 :02	Menu for users (See page 64 of the Instruction manual.)
DA1 LOW CUT SELECT (only U version)	Y:Lc A l:aF ∶on	Menu for users (See page 64 of the Instruction manual.)
DA2 LOW CUT SELECT (only U version)	4:Lc R2:oF :on	
DA3 LOW CUT SELECT (only U version)	4:Lc R3:oF :on	
DA4 LOW CUT SELECT (only U version)	4:Lc 84:oF :on	
FRONT MIC1 SELECT (only E version)	4:Fr 1 :on :SE	Menu for users (See page 64 of the Instruction manual.)
BACK SPACE MODE SELECT	4:6c 5P:P6 :EE	Menu for users (See page 64 of the Instruction manual.)

1.9.6 Software version display (Group 5)

These items allow confirmation of software versions in use without removing the outer case of the set. The details of the displays are shown below.

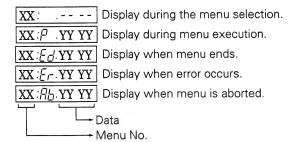
Menu names	Counter display	Board names Symbol No.	Remarks
SYSCON/SERVO version	5:59 <u>x.xx</u>	SS/REP board IC603	PLSC1235-V <u>X-<u>XX</u></u>
AV micro computer version	5:Au <u>X</u> : <u>XX</u>	MAIN board IC101	PLSC1236-V <u>X</u> - <u>XX</u>
LCD micro computer version	5:Lc <u>X:XX</u>	AUDIO & LCD board IC401	PLSC1237-V <u>X-XX</u> (E Version) PLSC1262-V <u>X-XX</u> (U Version)

Table 1.9.6 (1) Software version display

1.9.7 Self-diagnosis mode (Group 6)

Twenty-one menus are provided in the self-diagnosis mode to check the internal operation of the set. Pressing the [SELECT] button after selecting a menu allows starting of the self-diagnosis

At this time, the following displays appear on the counter display.



(1) Detection of servo reference signal



This menu allows checks if the servo reference signal is being supplied normally to the S/S micro computer.

[How to operate]

During the above a menu is displayed, the result of the diagnosis is displayed when the [SELECT] button is pressed.

If an error display appears, check if the TSR signals (75 Hz) generated from DCI-P (MAIN board IC206-pin120) is supplied to the S/S micro computer (SS/RFP board IC601-pin67).

(2) Tracking data display



This menu allows display of the present tracking phase data.

[How to operate]

During the above a menu is displayed, the tracking data (hexadecimal number) is displayed when the [SELECT] button is pressed.

Display sample / / :Ed.05:bF

In case the tracking data during the alignment tape MSHP-X playback is out of the area either the "6097" H - "61C1" or the "0000" H - "0EA8" H, X values may be misadjusted.

(3) Mechanism operation check (without a cassette)

1 ≥: .-- --

This menu is used for checking the mechanism operation.

[How to operate]

With the above display, pressing the [SELECT] button allows the starting of the mechanism automatically without inserting a cassette tape to check if there is any abnormality in the mechanism. The result of the diagnoses is displayed as follows.

In the data area of the error display, the data "X", "Y" and "Z" (hexadecimal number) which indicate abnormal points are displayed. Correspond them to the table below in order to detect any abnormal occurrence points. In the tables, the mark "O" is provided for the points where an abnormality occurs. For example, if "12: ER. 00 40" is displayed, it means that data "Y" is "4", so that you can tell that the abnormality of "Capstan motor does not rotate" has occurred by Table 1.9.7 (2).

Display "X"	0	1	2	3
Unloading failed.			0	0
Loading failed.		0		0

Table 1.9.7 (1) Mechanism operation abnormality display "X"

Display "Y"	0	1	2	3	4	5	6	7
Capstan motor does not rotate.					0	0	0	0
Drum motor does not rotate.			0	0			0	0
Reel brake does not work.		0		0		0		0

Table 1.9.7 (2) Mechanism operation abnormality display "Y"

Display "Z"	0	1	2	3	4	5	6	7	8	9	Α	b	С	d	Ε	F
TU reel does not rotate.									0	0	0	0	0	0	0	0
SUP reel does not rotate.					0	0	0	Ö					0	0	0	0
Condensation has occurred.			0	0			0	0			0	0			0	0
Tape LED abnormality		0		0		0		0		0		0		0		0

Table 1.9.7 (3) Mechanism operation abnormality display "Z"

(4) Mechanism operation check (with a cassette)

/ 3: .----

This mode is used for checking a mechanism operation.

[How to operate]

During the above displays, inserting a cassette tape allows the start of the mechanism automatically in order to diagnose if there is any abnormality.

In the data area of the error display, the data "X" and "Y" (hexadecimal numbers) which indicate abnormal points are displayed. Correspond them to the table below to detect any abnormal occurrence points. In the table below, the mark "O" is provided for the points where an abnormality occurs.

Display "X"	0	1	2	3	8	9	Α	b
Unloading failed.					0	0	0	0
Loading failed.			0	0			0	0
TU reel abnormality		0		0		0		0

Table 1.9.7 (4) Mechanism operation abnormality display "X"

Display "Y"	0	2	4	6	8	Α	С	Ε
SUP reel abnormality					0	0	0	0
End sensor abnormality			0	0			0	0
Begin sensor abnormality		0		0		0		0

Table 1.9.7 (5) Mechanism operation abnormality display "Y"

(5) EEPROM writing check

14: .----

This menu allows checks if the data has been written to EEPROM (SS/RFP board IC606) correctly or not.

[How to operate]

During the above display, pressing the [SELECT] button allows a start of the diagnosis and displays the results as follows.

• Normal [4:Ed:00 00]
• Abnormal [4:Er:00 00]

In case an error display appears, the EEPROM may be damaged.

(6) Switching points check



This menu allows us to measure the switching points during playback.

[How to operate]

After pressing the [SELECT] button during the above display, insert a cassette tape in order to initiate the PLAY mode. An S/S micro computer starts measuring the switching points and displays the results of the measured data (hexadecimal numbers) as follows.

The measured data "YY" should be in the area between "0C" H - "F4" H. If it is out of this area or an error display appears, check the switching point auto-adjustment (Menu No. 64) and also if an HID signal (position information of a rotation head) and SPA signal (recording position information of ITI signal on the tape pattern, SS/RFP board IC601-pin56) are correctly supplied to S/S micro computer.

(7) Sync. count check

This menu allows us to check if the DCI-P (MAIN board IC206) can read the playback signal data correctly or not.

[How to operate]

After pressing the [SELECT] button during the above display, insert a cassette tape in order to initiate the PLAY mode. The DCI-P starts checking the sync. data playback signals for each head and displays the result as follows.

• Normal 21 : Ed : 00 00 Y

In case the data cannot be detected correctly, an error display as above appears.

Correspond the display data "Y" to the table below in order to find out which head's output has an abnormality.

Display "Y"	0	1	2	3	4	5	6	7	8	9	Α	b	С	d	Ε	F
CH2 Primary head									0	0	0	0	0	0	0	0
CH2 Trailing head					0	0	0	0					0	0	0	0
CH1 Primary head			0	0			0	0			0	0			0	0
CH1 Trailing head		0		0		0		0		0		0		0		0

Table 1.9.7 (6) Sync. count error data

In case the error display appears, there may be some dust on the rotation head or its service life is coming to an end, also the RF equalizer (SS/RFP board IC301, IC401) may be misadjusted or DCI-P (MAIN board IC206) may be damaged.

(8) I2C bus communication check



This menu allows us to diagnose if the AV micro computer (MAIN board IC101) communicates correctly with each of the digital process ICs on the MAIN board.

[How to operate]

During the above display, pressing the [SELECT] button allow us to start diagnosis and display results as follows.

If any communication error occurs, data "X", "Y" and "Z" which indicate the abnormality points are displayed on the above error display. Correspond them to the table below in order to find out in which IC the communication abnormality has occurred.

Display "X"	0	1	2	3	4	5	6	7	8	9	Α	b	С	d	Ε	F
AUDIO-2 (IC702)									0	0	0	0	0	0	0	0
AUDIO-1 (IC700)					0	0	0	0					0	0	0	0
SHUFF (IC224)			0	0			0	0			0	0			0	0
ECC-2 (IC217)		0		0		0		0		0		0		0		0

Table 1.9.7 (7) I²C bus communication error data "X"

Display "Y"	0	4	8	С
ECC-1 (IC216)			0	0
DCI-P (IC206)		0		0

Table 1.9.7 (8) I²C bus communication error data "Y"

Display "Z"	0	1
DCI-R (IC201)		0

Table 1.9.7 (9) I²C bus communication error data "Z"

(9) Tape condition check

∂4: .----

This menu judges the tape playback condition from the numbers of errors detected by DCI-P (MAIN board IC206) during playback and displays the results classified by four different levels.

[How to operate]

During the above display, press the [SELECT] button, then insert a cassette tape to initiate the PLAY mode to display the tape conditions as follows.

Z4:Ed.00 00Hardly any errorsZ4:Ed.00 01Some errorsZ4:Ed.00 02Many errorsZ4:Ed.00 04Normal playback is not possible.

If error rate level "4" is displayed, there may be some dust on the rotation head or its service life is coming to an end, The RF equalizer (SS/RFP board IC301, IC401) may be misadjusted or the DCI-P (MAIN board IC206) may be damaged.

(10) Error rate measurement



This menu displays how many inner errors have occurred at the sync. block during two frames.

[How to operate]

Press the [SELECT] button, then insert a cassette tape to initiate the PLAY mode in order to display the error rate (hexadecimal numbers) as follows.

(11) Concealed count

This menu displays the numbers of error corrections of the video data carried out by the ECC (MAIN board IC216, IC217) per frame.

[How to operate]

Press the [SELECT] button, then insert a cassette tape in order to initiate the PLAY mode. The AV micro computer starts measuring the concealed count values in order to display the result as follows.

(12) SW operation, LCD/LED display confirmation

This menu is used for checking if the OPERATE SW and LED/LCD displays are operating correctly.

[How to operate]

Press the [SELECT] button to initiate this menu. The operation check is available with the following procedures.

- While the FF, REW, STOP, PLAY or EJECT button is pressed, the corresponding LED lights.
- While the [PRESET] button is pressed, all the segments of LCD light.
- While the [RESET] button is pressed, all the segments of the LCD turn off.
- The switch operation can be checked with a display on the COUNTER DISPLAY.

- A: [COUNTER] switch setting
 - 2: "UB" side, 1: "TC" side, 0: "CTL" side
- B: [TC GENERATOR] switch setting
 - 1: "PRESET" side, 0: "REGEN" side
- C: [TC GENERATOR] switch setting
 - 1: "REC" side, 0: "FREE" side
- D: [TC DISP] switch setting
 - 1: "TC" side, 0: "SUB TC" side

(13) Tracking VR test

This menu is used for an operational check of the tracking VR inside a connector box.

[How to perform the operation]

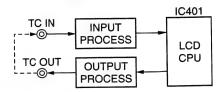
Set the auto tracking setting "4: At tr" of the setup menu to "oF", then select the tracking VR test "35: .-- --". In this condition, pressing the [SELECT] button allows to display

When the tracking VR is turned on, if the display data varies beyond the area between "40" - "C0", the tracking VR is normal.

(14) LTC loop test



This menu diagnoses the input/output circuit of the LTC by checking if the LTC reader (AUDIO&LCD board IC401) correctly reads the test signals generated from the LTC generator (AUDIO&LCD board IC401).



[How to operate]

During the above display, press the [SELECT] button, then carry out the loop connection between the TC IN terminal and the TC OUT terminal.

The results of the diagnostics are displayed as follows.

- During execution 3c:P . 00 00 the loop connection is now provided, the display will not be changed.)
- Normal 3c:Ed:00 00
- Abnormal 3c:Er:00:00

(15) TC reference signal detection

3E: .-- --

This menu allows to check if any FRP signals (AUDIO&LCD board IC401 - pin64) which are standard for the running of the time code data, are being supplied to the TC generator.

[How to operate]

During the above display, pressing the [SELECT] button allows to start diagnostics and displays the results as follows.

- Normal 3E:Ed:00 00
- Abnormal <u>3E:Er:00 00</u>

(16) Board connection check

44: .----

This menu is not operated because it is dummy.

(17) JVC bus communication check

This menu allows to diagnose if the S/S micro computer (master CPU) and each slave CPU (AV micro computer, LCD micro computer) are communicating correctly.

[How to operate]

During the above display, pressing the [SELECT] button allows to start the diagnosis and displays the results as follows.

● Normal 45:Ed:00 00

Abnormal 45: Er ⋅ 00 / X
 (X: 3 = AV micro computer, 5 = LCD micro computer)

When any communication error occurs, it locates which of the communications with the CPU caused the error and displays the information on the above error display.

(18) RF record current adjustment data display

Ч _С :	CH1 Leading head
Чд:	CH1 Lagging head
4E:	CH2 Leading head
ЧF:	CH2 Lagging head

This menu is used for confirming the adjustment values set by a recording current auto adjustment.

[Operation]

During the above display, pressing the [SELECT] button allows us to display the adjustment values for each head with hexadecimal numbers.

4c:Ed:00 YY	CH1 Leading head adjustment data
4d:Ed:00 Y Y	CH1 Lagging head adjustment data
	CH2 Leading head adjustment data
4F:Ed:00 YY	CH2 Lagging head adjustment data

1.9.8 Adjustment mode (Group 7)

There are two menus which are provided for the adjustment mode; an auto adjustment menu to carry out the adjustment automatically and a setting menu to initiate the adjustment mode. How to execute each menu is explained in the corresponding adjustment item or the table below.

Menu names	Display	VTR operation	Remarks
Search audio x1 playback	5月: (while menu is selected)	Search audio is output during the PLAY mode. It accepts a VHS cassette, then the tape is run with the VHS SP mode speed. However, the picture and the HiFi audio cannot be played back.	adjustment
Capstan FG duty/gain auto adjustment	5点: (while menu is selected)	Adjust the duty ratio of the capstan FG to 50%. Carry out the gain adjustment of the capstan FG. (stop servo adjustment) No operation can be executed during the auto adjustment.	3.4.1 Capstan FG duty adjustment

Table 1.9.8 (1) Adjustment modes-1/3

Menu names	Display	VTR operation	Remarks
Reverse torque adjustment	[]F: (while menu is selected)	It accepts a torque cassette for the VHS. Winding torque adjustment during the running of the REV is available. While the menu is being executed, the tape is always run by a capstan motor drive even if the FF/REW button is pressed. The tape speed of the search REV mode is then fixed to -1X speed.	2.9.2 Reverse torque adjustment
Unloading the torque adjustment	[]: (while menu is selected)	It accepts a torque cassette for the VHS. During the search REV mode, the supply reel is rotated with a winding torque while unloading. While the menu is executed, the tape is always run by a capstan motor drive even if the FF/REW button is pressed. The tape speed of the search REV mode is fixed to -1X speed.	2.9.1 Unloading torque adjustment
PLAY torque adjustment	には、・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	It accepts a torque cassette for VHS. A winding torque adjustment of the take-up reel during the FWD is available. While the menu is executed, the tape is always run by a capstan motor drive even if the FF/REW button is pressed. The tape speed of the search REV mode is fixed to normal speed.	2.9.3 PLAY torque adjust- ment
Emergency roll mode	(while menu is selected)	In case abnormal tape slack occurs, it drive the reel motor with low torque to wind up the slacked tape.	Refer to the section "1.7 HOW TO TAKE A CASSETTE OUT IN AN EMERGENCY".
Switching point auto adjustment	등니: (while menu is selected)	The switching point adjustment is carried out automatically.	3.4.3 Playback switching point adjustment
Manually loading/unloading	[5: (while menu is selected) [5: [7 .]]]]] [7 (during playing) [5: [7 .]]] [7] [7] [7] [7] [7] [7	The loading and unloading can be carried out without inserting a cassette. If a cassette is already inserted, it eject the cassette, then starts this menu.	[How to operate] Select the menu with the [SELECT] button, then press the button below while pressing the [OPERATE] button. [FF]: Loading [REW]: Unloading
Manual loading motor control	(while menu is selected) (while menu is selected) (buring playing) (curing playing) (curing playing)	The loading motor can be rotated manually without inserting a cassette. If a cassette is already inserted, it eject the cassette, then start this menu.	[How to operate] Select the menu with the [SELECT] button, then press the button below while pressing the [OPERATE] button. [FF]: Rotates for 34 ms towards the loading direction [REW]: Rotates for 34 ms towards the unloading

Table 1.9.8 (1) Adjustment modes-2/3

Menu names	Display	VTR operation	Remarks
X value adjustment	らり: (while menu is selected)	Auto tracking becomes OFF. Tracking the VR becomes invalid and playback starts at the tracking preset position.	2.11.5 X value adjustment
Tracking Preset auto adjustment	(while menu is selected)	The tracking is varied and the tracking position where an RF level becomes maximum, is searched automatically.	3.4.2 Tracking preset adjustment
VHS cassette acceptance	(while menu is selected)	It accepts a VHS cassette.	[How to operate] [SELECT]: Play [DATA SET] : End
Linearity measurement	다 (while menu is selected)	Linearity measurement mode is initiated with the RS-232C control. Auto tracking becomes OFF and the tracking VR becomes invalid.	2.12 CHECK OF LINEARITY
Tape pass running	(while menu is selected) [:]	When a cassette is inserted, it repeats PLAY mode (8 times) and SRH REV mode (7 times) on the same section of the tape (approx. 30 sec.), then eject the tape. While the running is being executed, the number of the executed running is displayed at "Y" with hexadecimal numbers. While the running is being executed, if the [DATA SET] button is pressed or the VTR mode is changed, or a tape end is detected during PLAY, an error message is displayed.	[How to operate] Select the menu by pressing the [SELECT] button, then insert a cassette on which a recording has been done.
RF REC1/4 CLK	CF: (while menu is selected) CF:P	Recording 1/4-divided clock (approx. 12.4MHz)	[How to operate] Select the menu by pressing the [SELECT] button, then record the internal clock.
RF recording current auto adjustment	קב: (while menu is selected)	It varies the recording current value with 8 steps at every 4 times. (approx. 2 sec.) and records the internal oscillation clock (approx. 12.4 MHz). This process is repeated four times. (It takes a little more than four minutes.) Then, it plays back the recorded section automatically and detects the best recording current value out of the output levels for each head.	
Battery voltage detection auto adjustment	(while menu is selected)	S/S micro computer (SS/RFP board IC601) measures the voltage at pin 68 and writes the difference between that value and the optimum value as the compensation value of the battery detection circuit on the EEPROM.	defection circuit adjustment

Table 1.9.8 (1) Adjustment modes-3/3

1.9.9 Warning history display

In the menu of this group, the following data regarding the last four warnings occurring can be displayed.

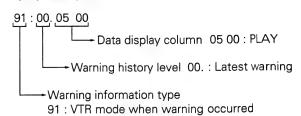
Display at the selected menu	Type of warning information
90:YY:	Warning code (Refer to the section 1.11)
9 /:YY:	VTR mode when the warning occurred. (Refer to the table 1.9.9 (2).)
9 ₂ :YY	VTR mode before the warning occurred. (Refer to the table 1.9.9 (2).)
93:YY	The last operate button to be pressed when the warning occurred. (Refer to the table 1.9.9.(3).)
94:YY	Power ON accumulated time [unit: hour] when the warning occurred.
95:YY	The battery voltage [unit: V] when the warning occurred.

Table 1.9.9 (1) Types of warning information

[How to operate]

- (1) Initiate the DIAG mode and select the group 8. (Refer to the section 1.9.2.)
- (2) Select the type of warning information with the [ITEM] button.
- (3) Select the warning history level with the [SELECT] button.
- (4) Pressing the [DATA SET] button allows us to display data regarding the selected information.

[Display example]



Data	VTR mode	Data	VTR mode	Data	VTR mode	
03 00	SEARCH FWD	0d 00	STOP	80 O I	REC BACK SPACE	
04 00	SEARCH REV	13 00	SKIP FWD	80 O2	REC PAUSE	
05 00	PLAY	14 DD	SKIP REV	<i>80 0</i> 4	REC PLAY	
07 00	NO CASSETTE (EJECT)	19 00	FF	80 IO	REC	
09 00	EJECT	IR 00	REW	8/0/	ASSM BACK SPACE	
OR 00	NO CASSETTE (INTAKE END)	15 OO	SHORT FF	8 / 04	ASSM PLAY	
Oc 00	STAND-BY OFF	lc 00	SHORT REW	92 02	REC LOCK	

Table 1.9.9 (2) VTR mode data

Data	Operate button	Data	Operate button	Data	Operate button
30 00	EJECT	33 00	REW	42 OO	REC+PAUSE
3 1 00	STOP	40 00	PLAY	45 00	STANDBY
32 00	FF	4100	REC+PLAY	46 OO	REVIEW

Table 1.9.9 (3) Operate button data

1.9.10 Service item menu (Group 9)

In the menus of this group, the following menus are to carry out the data processing for the setup menu and the hour meter.

Menu selection displays	Functions						
Ь I:SA uE	Save the setting data for the setup menu.						
62:Lo Ad	Set the setup menu to the setting saved at "b 1:58 uE".						
63: In 16:	Set the setup menu to the factory set.						
64:Er AS	Delete the warning history data.						
67:Hr cL	(For factory use only)						
68:cn cL	(For factory use only)						

Table 1.9.10 (1) Service items menu

[How to operate]

- (1) Initiate the DIAG mode and select group 9. (Refer to the section 1.9.2.)
- (2) Select the [ITEM] button on the menu.
- (3) Pressing the [DATA SET] button allows execution. While the data is being written in the EEPROM, the "on" message is displayed for approx. one sec.

[Display example]

bl :SA:uE:on

1.10 HOW TO DETECT THE ALARM

The DY-90 provides alarm display functions in order to inform users of the remaining condition of the tape and battery. This section explains how to detect them. Please refer to page 81 in the INSTRUCTIONS regarding the alarm display details.

Items	Conditions	Detecting methods
Servo lock error "SERVO"	At the IN point of the continuous recording, this occurs if a drum rotation phase error happens for more than 450 micro s or if the capstan motor rotation speed varies more than 6%.	S/S micro computer (SS/RFP board IC601) detects the drum rotation phase from the phase difference between the TSR signal and the ID signal, and the capstan motor speed from the frequency of the CAP x 2FG signal.
Head clog "RF"	This occurs when the RF signal is lacking for one second during the back space operation. (However, it also enters the alarm mode if the signal is lacking for 0.5 second just before ending the back space operation.)	It judges that the RF signal is lacking when the RF level detection circuit output (SS/RFP board IC615 - pin17) becomes lower than 0.27 V.
Lithium battery fault "Li"	This occurs when a lithium battery is exhausted or is not installed.	When the input voltage (AUDIO&LCD board IC 422 -pin3) of the battery backup switching circuit becomes lower than 2.7 V, the signal at the PREEND terminal (pin2) is at a low level. This results in the Alarm mode being entered.
Tape remaining time	This occurs when the remaining tape is less than 2 min. during recording or the recording pause function, or when the tape end is detected during recording.	S/S micro computer (SS/RFP board IC601) detects the tape remaining time from the diameter of the supply reel and the tape end from the end sensor output.
Battery remaining time E 到红	This occurs when the battery capacity is insufficient.	1

Table 1.10 (1) How to detect the alarms

1.11 ERROR CODES

The DY-90 diagnoses the causes of malfunctions and displays the error codes. The procedures of each error detection are explained below.

Dew condensation indicator:
 Lights when error code is "02:1".

Auto-OFF indicator:
 Lights depending on the error codes.
 When this indicator lights, the VCR will automatically stop the operation or eject the cassette, and VCR does not any operation.



01:1 Disconnection or short circuit of LEDs for leader tape detection

• VTR operation: This ejects a cassette.

If a cassette is not inserted, one cannot be accepted until the warning is released.

- [AUTO OFF] display in the LCD: Not lit.
- Causes: Disconnection of the tape LED
- How to detect: When the IC601 pin75 (normally approx.
 1.1 V) becomes 250 ms or more and 3 V or more or 0.5 V or less.

02:1 Condensation

- VTR operation: It enters the AUTO OFF mode. When a cassette is not inserted, the drum motor starts rotation. When the condensation is cleared, the warning is released automatically and normal operation will start.
- [AUTO OFF] display in the LCD: Lit.
- Causes: Condensation or a malfunction of the DEW sensor
- How to detect: When the DEW sensor output (IC601 pin73)
 becomes 3 V or more, it enters the warning
 mode. When it becomes 2 V or less, the
 warning is released.

32:1 The loading cannot be completed

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Malfunction of a mode sensor, a loading motor, an MDA circuit (IC623) or a loading mechanism.

An inferior of a cassette tape.

 How to detect: The loading cannot be completed within eight seconds when it checks the mode sensor output (IC602 - pin19, 20, 21).

32:2 Tape slack during loading

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Malfunction of a loading mechanism (Stack of a guide roller)

 How to detect: When the 800 SP reel FG (IC601 - pin62) pulses (= 20 rotation) or more are output during the loading.

33:1 Unloading cannot be completed

- VTR operation: It enters the AUTO OFF mode.
- [AUTO OFF] display in the LCD: Lit.
 - Causes: Malfunction of a mode sensor, a loading motor, an MDA circuit (IC623) or a loading mechanism.

An inferior of a cassette tape.

 How to detect: The unloading cannot be completed within eight seconds when it checks the mode sensor output (IC602 - pin19, 20, 21).

56:3 SP reel over run due to a tape breakage

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Tape breakage due to abnormal tension, insertion of a damaged tape or scratches on the mechanism running parts.
 Abnormal tape winding in a cassette.
- How to detect: When the SP reel FG (IC601-pin 62) becomes a high frequency exceeding the specific limit for 3 seconds or more during the capstan REV mode.

56:4 TU reel over run due to tape breakage

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Refer to the error code "56:3".
- How to detect: When the TU reel FG (IC601-pin 63) becomes a high frequency exceeding the specific limit for 3 seconds or more during the capstan FWD mode.

56:5 The simultaneous detection of begin and end of the tape due to a tape breakage

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Tape breakage due to abnormal tension, insertion of a damaged tape or scratches on the mechanism running parts.

A malfunction of the sensor may cause this error due to an exposure to sunlight or incandescence when the unit is used without an outer case.

 How to detect: When both the tape begin sensor (IC601 pin77) and the tape end sensor (IC601 pin76) outputs are of a low level during loading.

56:6 Tape breakage during unloading

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.

 Causes: Tape breakage due to abnormal tension, insertion of a damaged tape or scratches on

the mechanism running parts.

 How to detect: When the 1200 SP reel FG (IC601 - pin62) pulses (= 30 rotation) or more are output during unloading.

56:8 Tape breakage during loading

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.

Causes: Refer to the error code "56: 6".

 How to detect: When only the 20 SP reel FG (IC601 - pin62) pulses (= 1/2 rotation) or less are output during loading.

57:1 Short REW cannot be completed

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.

• Causes:

Tape breakage due to abnormal tension, insertion of a damaged tape or scratches on the mechanism running parts.

A malfunction of the sensor may cause this error due to an exposure to sunlight or incandescence when the unit is used without an outer case.

Malfunction of the tape end sensor

How to detect: The tape end sensor output (IC601 - pin76) stays at a low level even when the 100 SP reel FG (IC601 - pin62) pulses (= 2.5 rotations) or more are output in the Short REW mode. (Short REW mode: When it detects the tape end soon after a cassette is inserted, it rewinds the tape equivalent to 2.5 rotations of the SP reel with approx. 5x-speed. This operation is called a Short REW mode.)

57: 2 Skip REV cannot be completed

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Refer to the error code "57:1".
- How to detect: The tape end sensor output (IC601 pin76) stays at a low level when the SP reel is rotated for five seconds or more in the Skip REV mode.

(Skip REV mode: When it detects the tape end at the loading end, it rewinds a leader tape at -1X speed. This operation is called a Skip REV mode.)

57: 4 Tape end detection during REV running

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Refer to the error code "57:1".
- How to detect: The tape end sensor output (IC601 pin76) becomes low level when a tape is wound in the REV direction.

58:1 Short FF cannot be completed

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes:

Tape breakage due to abnormal tension, insertion of a damaged tape or scratches on the mechanism running parts.

A malfunction of the sensor may cause this error due to an exposure to sunlight or incandescence when the unit is used without an outer case.

Malfunction of tape begin sensor

 How to detect: The tape begin sensor output (IC601 - pin77) stays at a low level even when the TU reel is rotated for three seconds and the 50 TU reel FG pulses (= a little more than one rotation) are output in the Short FF mode.

(Short FF mode: When it detects a tape beginning soon after a cassette is inserted, it first forwards a tape equivalent to the leader tape with approx. 5x-speed. This operation is called a Short FF mode.)

58:2 Skip FWD cannot be completed

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Refer to the error code "58:1".
- How to detect: The tape begin sensor output (IC601 pin77) stays at a low level when the SP reel is rotated for five seconds or more in the Skip FWD mode.

(Skip FWD mode: When it detects a tape begin at the loading end, it first forwards a reader tape at normal speed. This operation is called a Skip FWD mode.)

58: 4 Tape begin detection during FWD running

- VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.
- [AUTO OFF] display in the LCD: Not lit.
- Causes: Refer to the error code "58:1".
- How to detect: The tape begin sensor output (IC601 pin77) becomes low level when a tape is wound to the FWD direction.

70:1 Abnormal rotation of a drum motor

- VTR operation: It enter the AUTO OFF mode.
- [AUTO OFF] display in the LCD: Lit. (However, it does not light during loading).

Causes: Malfunction of a drum motor inside a drum

assembly or an MDA circuit.

Disconnection of a drum assembly.

Malfunction of a switching regulator circuit

(SS/RFP board IC901)

How to detect: The drum FG (IC601 - pin65) cannot be de-

tected for two seconds or more in the cor-

rect drum motor rotation mode.

71:1 Abnormal rotation of a capstan motor

• VTR operation: It enters the AUTO OFF mode.

• [AUTO OFF] display in the LCD: Lit.

 Causes: Malfunction of a capstan motor or an MDA circuit inside a capstan motor assembly.

Disconnection of a capstan motor assembly.

Malfunction of a switching regulator circuit

(SS/RFP board IC901)

 How to detect: Any capstan FG (IC601 - pin 64) pulse is not output for one second or more in the capstan drive mode (PLAY, REC, SEARCH FWD/

EV).

72:1 Tape is slack at the tape supply side during the capstan drive mode

• VTR operation: It enters the AUTO OFF mode.

• [AUTO OFF] display in the LCD: Lit.

• Causes: Malfunction of a reel motor or a MDA circuit

(SS/RFP board IC809, Q809 - Q811). Disconnection of the reel motor assembly. Malfunction of the switching regulator cir-

cuit (SS/RFP board IC901).

Failure of a reel idler.

 How to detect: Any SP reel FG (IC601 - pin62) pulse is not output while the 6912 capstan FG (IC601 pin64) pulses (= 4.8 rotation) are generated in the capstan drive mode (PLAY, REC.

SEARCH FWD/REV).

72: 4 SP reel overrun when a cassette is not inserted

• VTR operation: It enters the AUTO OFF mode.

• [AUTO OFF] display in the LCD: Lights.

• Causes: Wrong detection of reel FG because of the

interference of pulses.

Malfunction of reel MDA circuit (SS/RFP

board IC809, Q809 - Q811).

• How to detect: When the SP reel FG (IC601 - pin 62) be-

comes a high frequency exceeding the specific limit for 3 seconds or more without in-

serting a cassette.

72:5 SP reel does not rotate during unloading

• VTR operation: It enters the AUTO OFF mode.

• [AUTO OFF] display in the LCD: Lights.

• Causes: Refer to the error code "72 : 1".

How to detect: Only 20 SP reel FG (IC601 - pin62) pulses (=
 1/2 rotation) are output during unloading.

72:7 SP reel does not rotate during Short REW

 VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.

• [AUTO OFF] display in the LCD: Not lit.

• Causes: Refer to the error code "72:1".

How to detect: Only 100 SP reel FG (IC601 - pin62) pulses
 (= 2.5 rotation) or less are output within five
 seconds during the Short REW mode.
 (Short REW mode: When it detects the tape
 end soon after a cassette is inserted, it re winds the tape equivalent to 2.5 rotations of
 an SP reel with approx. 5x-speed. This op eration is called a Short REW mode.)

73:1 Tape slack at the take-up side during the capstan drive mode

• VTR operation: It enters the AUTO OFF mode.

• [AUTO OFF] display in the LCD: Lights.

• Causes: Refer to the error code "72:1".

 How to detect: Any TU reel FG (IC601 - pin63) pulse is not output while the 6912 capstan FG (IC601 pin 64) pulses (= 4.8 rotation) are generated in the capstan drive mode (PLAY, REC, SEARCH FWD/REV).

73:4 TU reel overrun without a cassette insertion

VTR operation: It enters the AUTO OFF mode.

• [AUTO OFF] display in the LCD: Lights.

• Causes: Refer to the error code "72:4".

How to detect: TU reel overruns without inserting a cassette, and the 40 TU reel FG (IC601 - pin63) pulses (= one rotation) or more are output in a second.

73:7 SP reel does not rotate during Short FF

 VTR operation: It ejects a cassette. When a cassette is inserted again and the loading is completed, the warning is released.

• [AUTO OFF] display in the LCD: Not lit.

Causes: Refer to the error code "72:1".

• How to detect: The tape begin sensor output (IC601 - pin77) stays at a low level even if the TU reel is rotated for three seconds and the 50 TU reel FG pulses (= a little more than one rotation) or less are output in the Short FF mode. (Short FF mode: When it detects a tape beginning soon after a cassette is inserted, it first forwards the tape equivalent to the leader tape with approx. 5x-speed. This operation is called a Short FF mode.)

1.12 EEPROM (VTR)

IC606 on the SS/RFP board is an EEPROM which can erase and write electrically and stores the following data regarding DIAG mode.

Stored data	In EEPROM replacement
[Group 1] Data of hour meter	All data will be reset.
[Group 3] Setting data of the battery alarm/end detection voltage	Returns to the factory setting
[Group 4] Setting data of setup menu (Including menus for users)	Returns to the factory setting
[Group 7] Adjusted data set at the Adjustment mode	Returns to the factory setting
[Group 8] Data regarding to the Warning history	All data will be deleted.
[Group 9] Setting data of the setup menu saved at the DIAG menu "b1"	All data will be deleted.
Model name, serial No. (only to be used at the factory)	All data will be deleted.

Table 1.12 (1) EEPROM stored data

When the EEPROM is replaced, the following adjustment data for the group 7 return to the factory setting applies. Make sure to readjust them again.

- (1) DIAG menu No. 5d: Capstan FG duty/gain auto adjustment
- (2) DIAG menu No. 5F: Reverse torque adjustment
- (3) DIAG menu No. 61: Unloading torque adjustment
- (4) DIAG menu No. 62: PLAY torque adjustment
- (5) DIAG menu No. 64: Switching point auto adjustment
- (6) DIAG menu No. 68: Tracking preset auto adjustment
- (7) DIAG menu No. 72:RF record current auto adjustment
- (8) DIAG menu No. 86: Battery voltage detection auto adjustment

1.13 LITHIUM BATTERY

DY-90 employs a lithium battery (nominal voltage: 3 V) for the back up of the LCD micro computer. The data to be backed up is explained below.

- (1) Time code generator data (With free run mode, it keeps on counting during the execution of back up)
- (2) Date/Time data for SUB TC
- (3) Continuous recording IN point data
- (4) CTL counter data

IC422 on the AUDIO & LCD board performs switching to a lithium battery for backup.

This IC switches the power supply of the LCD micro computer to a lithium battery when the main voltage becomes 4.7 V or less. At this time, IC422 switches the "CS" output to low level, the LCD micro computer switches the clock oscillator to X402 and it will be operated with the sleep mode. Also, the IC422 detects the voltage of the lithium battery. When the voltage become 2.7 V or less, it switches the "PREEND" output to low level, then displays the alarm "Li" on the display.

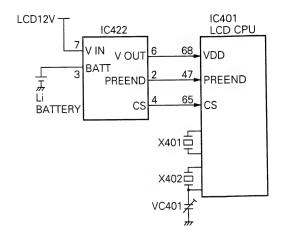


Fig. 1-13-1 Back up circuit

1.14 OPERATIONS OF SWITCHES AND SENSORS

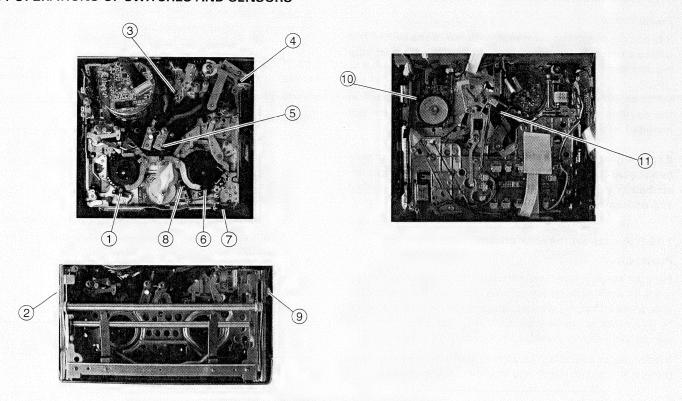


Fig. 1-14-1 Switches and sensors layout

1 Supply reel FG

40 pulses are output during a cycle of the reel disk.

2 End sensor

This detects the tape end.

3 Dew (condensation) sensor

This detects condensation.

5 After loading sensor

This detects the mechanism positions together with the mode sensor 1.

6 Tape LED

This illuminates in order to detect the tape end and beginning.

7 Takeup reel FG

This detects the rotation of a takeup reel.

40 pulses are output during a cycle of the reel disk.

7 Cassette switch

Three switches are built in.

Outside switch: It detects pits for mis-erase prevention.

Center switch : It detects a digital S cassette.

Inside switch : Not used.

8 Housing lock switch

Detects the opening and closing of a cassette housing.

9 Begin sensor

Detects a tape beginning.

10 Capstan MR

Generates sine waves with a frequency proportional to the rotation speed with a 2-phase output rotation sensor using MR elements.

11) Mode sensor

Detects mechanism positions and outputs three different signals as explained in Fig. 1.14.2.

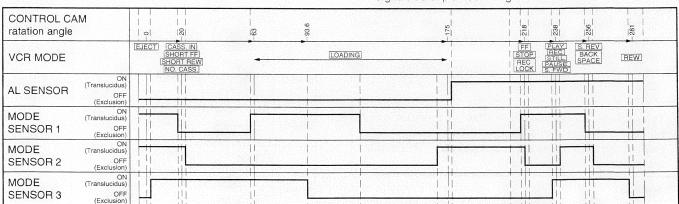


Fig. 1-14-2 Functions of Mode/AL sensors

1.15 How to adjust the color matrix setting

Precautions:

It is possible with the color matrix circuit in the DSP of this unit to alter the color reproduction characteristics by changing the nine different parameter settings. However, it is usually not necessary to change them because each one is set to an initial value which has been carefully selected at the development stage. Such parameter changes are not included in the normal electrical adjustment items.

If such adjustments are still necessary, perhaps in response to a request by a customer, the adjustment procedures described in the subsequent sections should be first studied and understood before being carried out.

1.15.1 How to set the color matrix

Preparation

For color matrix setting, you will need a color chart and a vector scope as a reference for any color reproduction. There is no color chart specified for use in a color matrix setting. Use the one selected by your customer who wishes you to make the adjustment. Fully discuss the customer's needs before carrying out the setting.

A color matrix setting can be accomplished by selecting menu items appearing on the VF and monitor output displays.

MODE	:	МЗ	M2	M1	DATA
R±(R-G)	:	*	*	*	*
R±(R-B)	:	*	*	*	*
G+(G-R)	:	Х	*	*	*
G-(G-R)	:	*	Х	*	*
G+(G-B)	:	X	*	*	*
G-(G-B)	:	*	Х	*	*
B+(B-G)	:	Χ	*	*	*
B-(B-G)	:	*	Χ	*	*
B±(B-R)	:	*	*	*	*

Fig. 1-15-1 Color matrix adjustment display

Follow the steps given below to enable setting.

- (1) Remove the right-hand side cover (See 1.3.1)
- (2) Turn the dip switch S1-6 on the CP board to ON, and the color matrix setting menu will appear on the viewfinder and monitor output displays.
- (3) Move the cursor (blinking character) to the desired item with S11 (ITEM SW) and S12 (SET SW).
- (4) Carry out adjustments with S9 (DOWN SW) and S10 (UP SW) on CP board. The adjustment values M3, M2 and M1 are represented by 0 or 1 and "DATA" by any number between 0 and 31.
- (5) Turn the dip switch S1-6 on the CP board OFF to cancel the color matrix setting menu and to resume the opening menu.

NOTE

The setting is stored and made effective every time any number is changed for a selected setting item.

Setting the item marked X is not possible (No need to attempt a setting of this item).

Precaution

S13 (MENU SW) on CP board serves as a data reset switch. Pressing this switch during setting causes all the data entered to be cleared, resetting to the initial values.

1.15.2 Details of the individual setting items

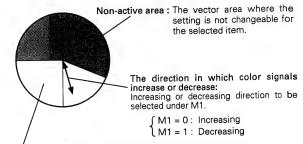
9 parameters can be used, as described above, to change 12 different setting items when color matrix setting. Setting details for these items are given in the Table below.

NOTE

The graphic models in the Table represent the following information.

(Example)

The chart below shows an image display on the vector scope.



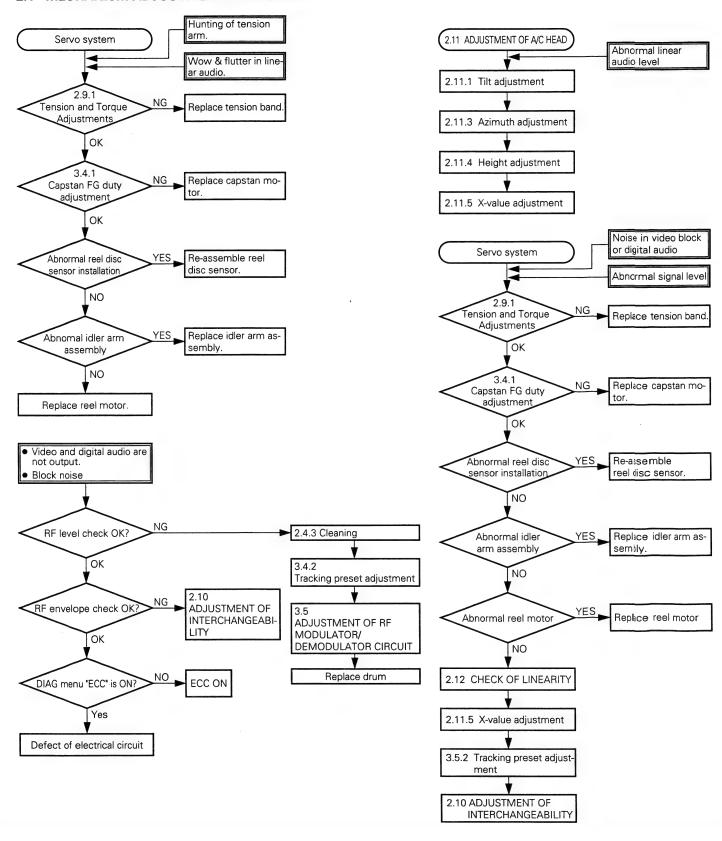
Active area: The vector area where the setting is changeable for the selected item (the area which is selectable under M3 or M2 in some items).

MODE	Graphical representation in the ACTIVE area	M3 0 : Active 1 : Inactive	M2 0 : Active 1 : Inactive	M1 0 : Increase 1 : Decrease	DATA 0 – 31
R±(R-G)	M3	→ 0 or 1	→ 0 or 1	0 or 1	*
R±(R-B)	M3	→ 0 or 1	→ 0 or 1	0 or 1	*
G+(G-R)	M2	×	→ 0 or 1	0 or 1	*
G-(G-R)	M3 /	→ 0 or 1	×	0 or 1	*
G+(G-B)	M2	×	→ 0 or 1	0 or 1	*
G-(G-B)	M3	→ 0 or 1	×	0 or 1	*
B+(B-G)	M2	×	→ 0 or 1	0 or 1	*
B-(B-G)	M3	→ 0 or 1	×	0 or 1	*
B±(B-R)	M3 ————————————————————————————————————	→ 0 or 1	→ 0 or 1	0 or 1	*

Table 1-15-1

SECTION 2 MECHANISM ADJUSTMENTS

2.1 MECHANISM ADJUSTMENT FLOWCHART

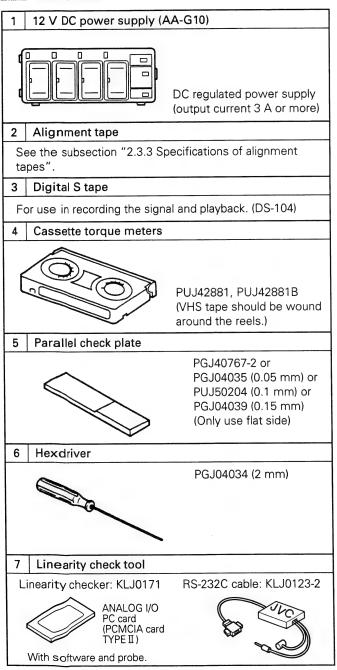


2.2 REQUIRED MEASURING INSTRUMENTS FOR ADJUSTMENTS, STANDARD SETUP

2.2.1 Required measuring instruments for adjustments

Instrument	Condition
Oscilloscope	Capable of measuring 100 MHz or higher bands and calibrated.
Digital voltmeter	Input impedance 10 $M\Omega$ or more, and calibrated.
Audio tester	Must be calibrated.

2.2.2 Instruments



2.2.3 General tools for mechanism adjustments

- Nut driver (5.5 mm)
- Tapered nut driver (PUJ50637)
- Hex. wrenches (0.9 mm, 1.27 mm, 2 mm)
- Phillips screwdrivers (4 mm, 2.6 mm, 2 mm)

3mm : PGJ04037 2.6mm : PGJ04038

- Flat-blade screwdriver
- Precision screwdriver
- Torque driver
- VHS tape (NTSC T-120/PAL T-180)
- DIGITAL S tape (DS104)

2.2.4 Procedure to activate DIAG mode

- 1) While holding the SELECT button depressed, press and hold the MENU button for more than 3 seconds.
- 2) Press the GROUP button to select group 7 (from "58: " to "86: ").
- 3) Press the ITEM button to select the specified menu.
- 4) Press the SELECT button to execute the item. See sub section "1.3.2" for details.

2.3 BEFORE PROCEEDING TO ADJUSTMENT

2.3.1 Precautions

- 1) Before using a soldering iron, be sure to unplug the power cord from the power supply outlet.
- 2) When removing a connector, do not pull the wire section but grasp the plug section.
- 3) In cases of trouble, do not turn adjustment points and potentiometers before the defective point is identified.
- 4) Remove the top and side covers before making any mechanism adjustments.
- 5) Each roller should be replaced independently of the replacement operations for other rollers, and the transport system should be checked every time after a roller has been replaced.
- 6) Before electrical adjustments, be sure to turn on the unit and leave it on for at least 10 minutes or more.
- 7) The oscilloscope probe should be a 10:1 probe unless otherwise specified.

2.3.2 Test point layout for measuring and tracking VR

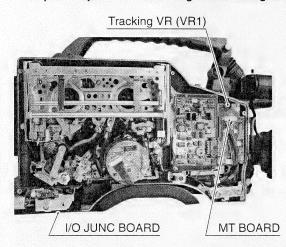


Fig. 2-3-1

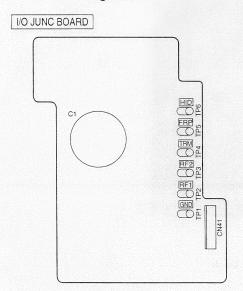


Fig. 2-3-2

2.3.3 Specifications of alignment tape

MHP: for U-ver.

(Stairstep segment of MH-1 tape is substitutable)

Video Signal	Audio Signal	Time (min.)	Applications
VHP (SP mode) stairstep	7 kHz (guard band recording)	20	A/C head azimuth adjustment.

MHPE: for E-ver.

(Stairstep segment of MH-2 tape is substitutable)

Video Signal	Audio Signal	Time (min.)	Applications
VHS (SP mode) Stairstep	6 kHz	20	For adjustment of A/C head azimuth.

MBA-3; for U-ver.

(Tape that MHA-3 is changed just in the name.)

Video Signal	Audio Signal	Time (min.)	Applications
	1 kHz (guard band recording)	_	A/C head height adjustment

MBAE-3; for E-ver.

(Tape that MHAE-3 is changed just in the name.)

Video Signal	Audio Signal	Time (min.)	Applications
attending David	1 kHz (guard band recording)	_	For adjustment of A/C head azimuth.

MSHP

Video Signal	Audio Signal	Time (min.)	Applications
Sine wave	-	50	Interchangeability adjustment

MSHP-X

Video Signal	Audio Signal	Time (min.)	Applications
Color bar (1 track per frame does not contain video.)	-	50	X-value adjustment, tracking preset adjustment.

2.4 MAINTENANCE AND INSPECTION OF MAIN PARTS

Periodical inspection and maintenance are the prerequisite for ensuring the original performance and reliability of the set. Table 2-4-1 (check and maintenance table for major parts) is compiled as a standard of main parts replacement on the assumption that the set is used in ordinary conditions. Therefore, replacing periods indicated in the table greatly differ depending on actual use and environmental conditions. Moreover, if the set undergoes inspection and maintenance irregularly or is left without inspection and maintenance, it not only shortens the

replacement period considerably but also affects other parts and the whole function.

Rubber parts require careful attention because they are apt to deform or deteriorate if the set is hardly used or left in bad environment.

The life time of the drum depends on use and environmental conditions.

2.4.1 Main Parts Layout

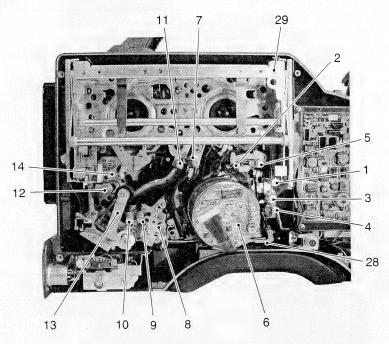


Fig. 2-4-1 Top Side of Deck

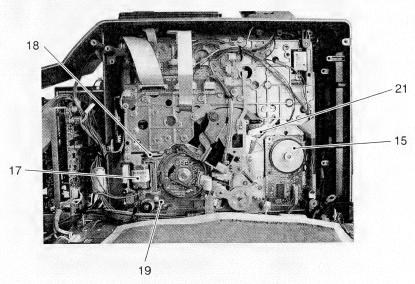


Fig. 2-4-2 Back Side of Deck

2.4.2 Check and maintenance table

Table 2-4-1 Check and maintenance table for major parts

★: Cleaning O: Replacing if required Cleaning if it is not replaced •: Replacing

Category	No.	Part Name	Reference section of this	Stand (Oper	dard so period ating h ee No	ervice - dours te	Symbol No. of part and page which is	Remark	
			manual	A	В	C	appears in		
	1	1st guide roller	2.7.2				M 4 No. 91		
	2	Supply tension arm assembly	2.7.4	*		•	M 4 No. 81	Including supply tension band	
	3	Full erase head guide roller	2.7.3				M 4 No. 108		
	4	Full erase head assembly	2.7.17	0		•	M 4 No. 111	Including tape scraper	
٤	5	Supply pole base assembly	2.7.5	*		•	M 4 No. 74		
yste	6	Drum assembly	2.5.2	•			M3 No. 59		
ort s	7	Take-up guide roller	2.7.11	*		•	M 4 No. 68		
ansp	8	A/C head assembly	2.7.7	0		•	M 4 No. 102		
Tape transport system	9	A/D head guide roller	2.7.8	*		•	M 4 No. 92		
<u>a</u>	10	Middle guide roller	2.7.9	*		•	M 4 No. 110		
	11	Draw pole base assembly	2.7.11	*		•	M 4 No. 70		
	12	Capstan shaft	2.4.5	*			_		
	13	Pinch roller assembly	2.7.6	*	•		M 4 No. 99		
	14	Take-up tension arm assembly	2.7.10	*		•	M 4 No. 84	Including Take-up tension band	
	15	Capstan motor assembly	2.7.13			•	M 4 No. 27		
	16	Reel motor assembly	2.7.14	0	0		M 4 No. 43	Including belt	
	17	Mode motor assembly	2.7.15				M 4 No. 21		
	18	Belt	2.6.3	*	•		M 4 No. 21E		
	19	Timing belt	2.7.12				M 4 No. 25		
tem	20	Supply rubber tire	2.7.18	*		•	M 4 No. 58A		
sks	21	Take-up rubber tire	2.7.18				M 4 No. 59A		
Drive system	22	Idler arm assembly	2.6.4				M 4 No. 64		
	23	Supply tension band	2.6.5				M 4 No. 82		
	24	Take-up tension band	2.6.6	*			M 4 No. 84D		
	25	Sub-brake	2.6.7				M 4 No. 55		
	26	Supply reel disk assembly	2.4.6				_	Oiling to the shaft.	
	27	Take-up reel disk assembly	2.4.6	☆	☆	☆	_	Oiling to the shaft.	
	28	Head cleaner	2.5.3	•			M 4 No. 116	Excluded from drum assembly	
**	29	Cassette housing assembly	2.6.2				M 5		
Others	30	Control cam	2.7.16	1_			M 4 No. 9		
Ò	31	Roller	2.7.16	*			M4 No. 8		
	32	Pinch cam arm assembly	2.7.16	1			M 4 No. 14		

Note: For fixing an aim to service, follow the indication of the DRUM HOUR METER appearing on the MENU switch seting screen in general.

A: every 500 hours, B: every 1000 hours, C: every 2000 hours

2.4.3 Cleaning

It is desirable to carry out periodical cleaning of the tape transport system, however, it is almost impossible to do it during actual use of the set. Therefore, clean the tape transport system, without fail whenever the set is brought in for service. For cleaning, use fine woven cotton cloth moistened with ethyl alcohol.

 If the head is dirty or dusty, playback picture may consist of a great deal of minute square blocks because of malfunction of error correction, or the set fails in playing back picture for the worst.

For cleaning the video head, turn the middle drum in the normal direction (connter clockwise) while pressing quality paper lightly onto the surface of the middle drum.

Note: -

Since the video head is weak against vertical force (applied in up-down direction), it may easily be damaged if cleaning paper is moved.

2. Dirty and dusty tape guide not only increases dirt on the video head but also damages tape.

If dust and foreign particles have collected on and around guide rollers, it may possibly cause abnormal roller rotation and may result in deterioration in picture quality as mentioned above.

2.4.4 Oiling and greasing

If oil or grease looks worn or deteriorated, wipe it off and then apply new oil or greases to the specified place.

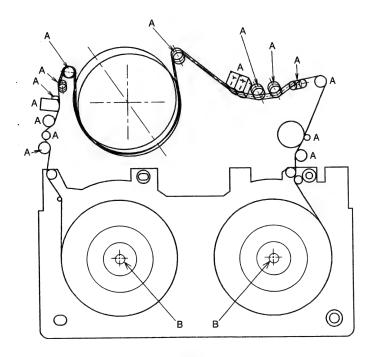
1. Table 2-4-2 shows oil and grease used in this set.

Table 2-4-2 Oil an grease used in this set

Classificcation	Name	Part No.
Oil*	Cosmo Hydro HV56	COSMO-HV56
Grease	Moriton Grease (Black)	MOS2-C

^{*}General spindle oil (low viscosity) is substitutable.

- 2. Control cam needs greasing every 2000 hours of operation.
- 3. Other parts need greasing every 2000 hours of operation or at the time of replacement.
- 4. For parts that need oiling or greasing, refer to the exploded view of SECTION 5 EXPLODED VIEWS AND PARTS LIST.



A : Cleaning

Fig. 2-4-3

B: Oiling

2.5 PERIODICAL MAINTENANCE AT EVERY 500 HOURS

2.5.1 500-hour periodical maintenance flowchart

Fig. 2-5-1 shows the procedure of the periodical maintenance operation to be performed after every 500 hours of operation.

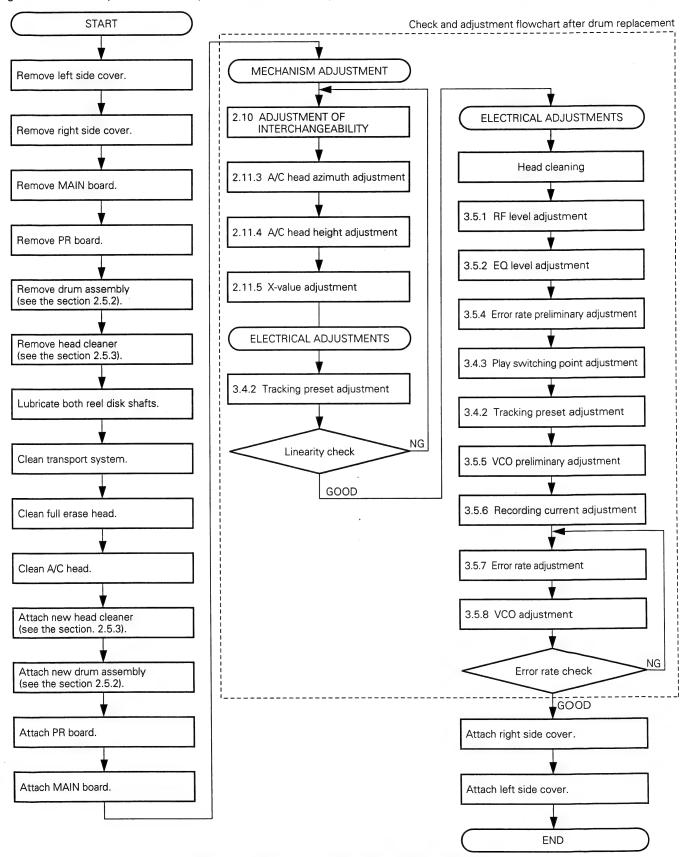
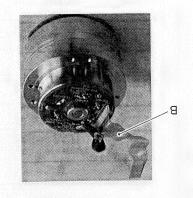


Fig. 2-5-1 500-Hour Periodical Maintenance Flowchart

Procedure	Reference Diagrams	məĦ	.oN	

[CANTION] • When replacing the drum assembly, take enough care to avoid leaving fingerprints on the drum assembly, by wearing

4. Remove the flat cable B (see Fig. Z-5-4). upward (see Fig. 2-5-3). 3. Remove the drum assembly by gently lifting it .nwob llet fon soob fi tedt assembly A from its front side with your hand so When removing the screws, support the drum the drum from the rear side. (see Fig. 2-5-2). 2. Remove the three screws 1 which are retaining Removal 1. Remove the connector C. (see Fig. 2-5-3) • After replacing the drum assembly, be sure to perform the adjustments as shown in the flowchart (see Fig. 2-5-1). gloves, etc. 2.5.2 Drum assembly replacement



5. Remove the shield plate D (see Fig. 2-5-5).

Fig. 2-5-4

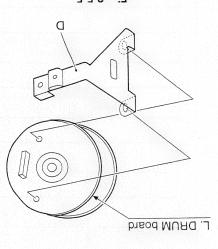
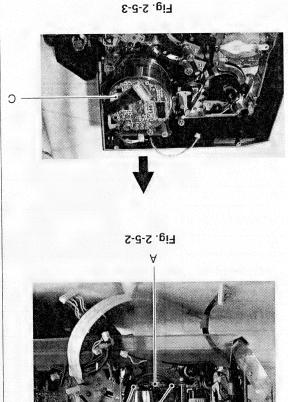


Fig. 2-5-5



2-8

No.	ltem	Reference Diagrams	Procedure



Marking of the	S201 [MAIN : A-1E]						
drum assembly	1	2	3	4			
F	OFF	OFF	OFF	OFF			
Е	OFF	OFF	OFF	ON			
D	OFF	OFF	ON	OFF			
С	OFF	OFF	ON	ON			
В	OFF	ON	OFF	OFF			
Α	OFF	ON	OFF	ON			
9	OFF	ON	ON	OFF			
0	ON	ON	ON	ON			
1	ON	ON	ON	OFF			
2	ON	ON	OFF	ON			
3	ON	ON	OFF	OFF			
4	ON	OFF	ON	ON			
5	ON	OFF	ON	OFF			
6	ON	OFF	OFF	ON			
7	ON	OFF	OFF	OFF			

- Attach the drum assembly by reversing the removal procedure. The tighten torque of screw 1 should be 0.49 N-m (5 kgf-cm).
- 2. After attaching the drum assembly, set the DIP switch S201 on MAIN board to as left according to marking of the drum assembly.
- 3. Perform checks and adjustments as indicated in Fig. 2-5-1, " Check and Adjustments Flowchart After Drum Replacement".

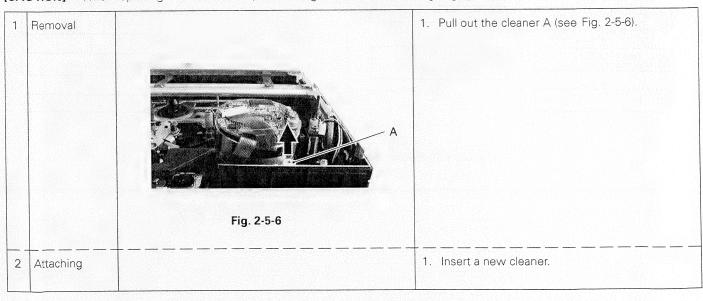
CAUTION -

The configuration of the S201 is arranged to satisfy the requirements of the high-speed auto tracking system which has newly been added to the PR-D92/52. This new auto tracking feature enables a faster startup of the servo during playback than was possible with previous auto tracking systems.

Since the tracking pattern should now be more accurate during recording, the MAIN board should be configured to set the head angle of the S201. If the S201 is not set properly and the recorded tape is played on a VCR equipped with the high-speed auto tracking feature (PR-D92/52), the high-speed auto tracking may not function properly. DY-90 does not have high-speed auto tracking circuitry.

2.5.3 Head cleaner replacement

[CAUTION] • When replacing the head cleaner, take enough care to avoid leaving fingerprints on it.



2.6 PERIODICAL MAINTENANCE AT EVERY 1000 HOURS

2.6.1 1000-hour periodical maintenance flowchart

Fig. 2-6-1 shows the procedure of the periodical maintenance operation to be performed after every 1000 hours of operation.

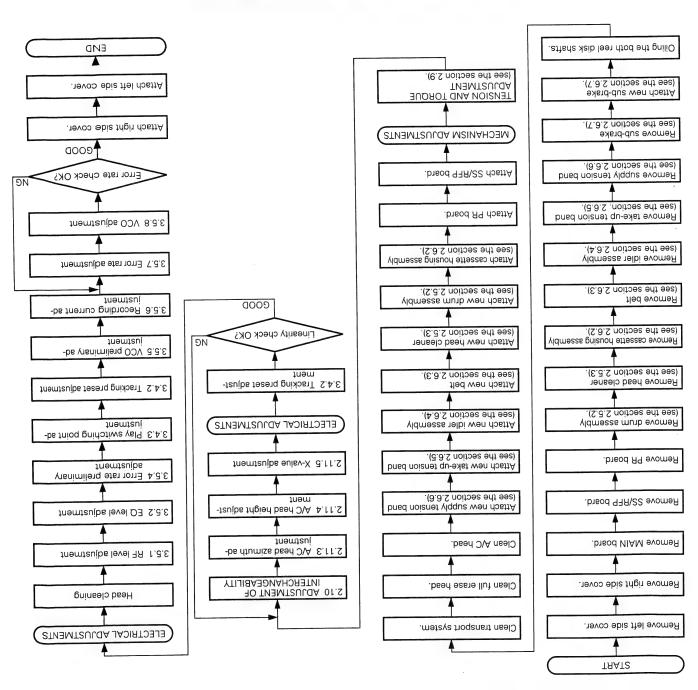
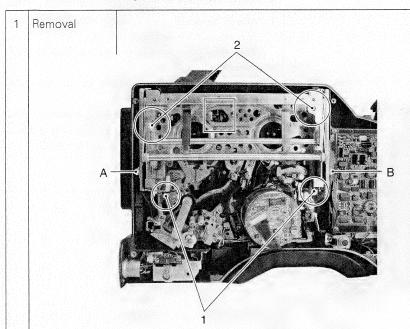


Fig. 2-6-1 1000-Hour Periodical Maintenance Flowchart

No.	Item	Reference Diagrams	Procedure
			(1) 하는 경기 (1) 가는 경기 기계 가는 것이 되었다. 그는 것이 되었다.

2.6.2 Cassette housing assembly replacement



1. Remove the left side cover (see the section. 1.2.2).

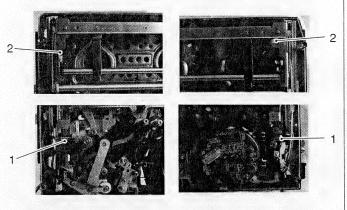


Fig. 2-6-2

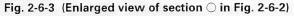
2. Remove connectors A and B (see Fig. 2-6-2).

3. Remove the two screws 1 and loosen the two screws 2 (the screws 2 cannot be removed because they are held by a spring) (see Fig. 2-6-3). The right screw of screws 2 is located behind the door of the cassette housing assembly, so it should be loosened after pushing back the door.

4. Remove claw C of the lock unit. This unlocks the cassette housing and opens the cassette hous-

ing assembly D (see Fig. 2-6-4).

5. Remove cassette housing assembly D.



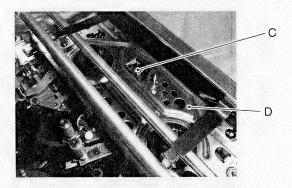
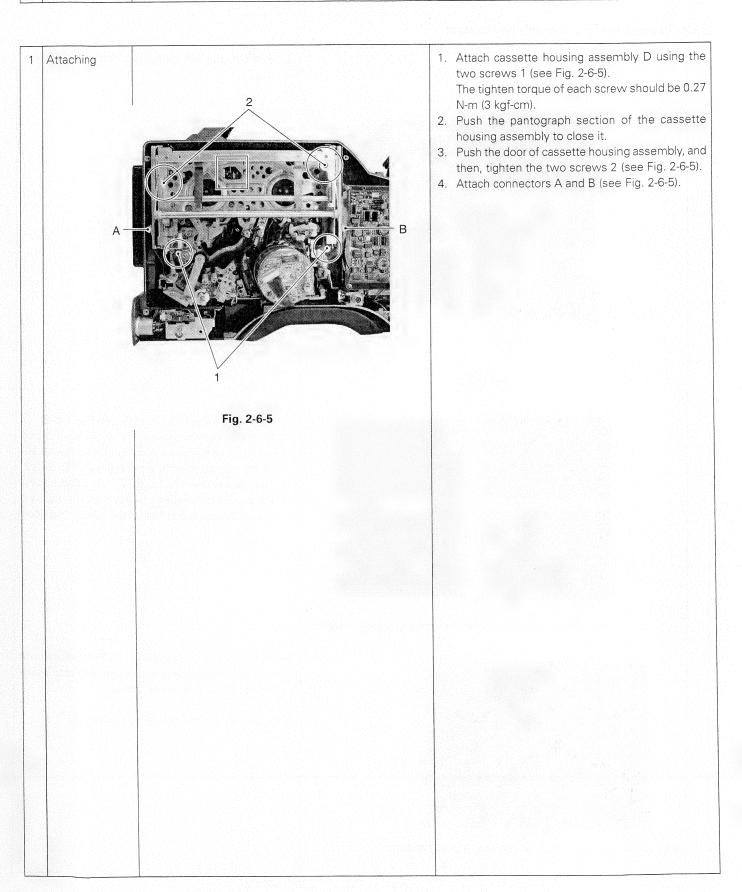


Fig. 2-6-4 (Enlarged view of section ☐ in Fig. 2-6-2)

No. Item	Reference Diagrams Procedure

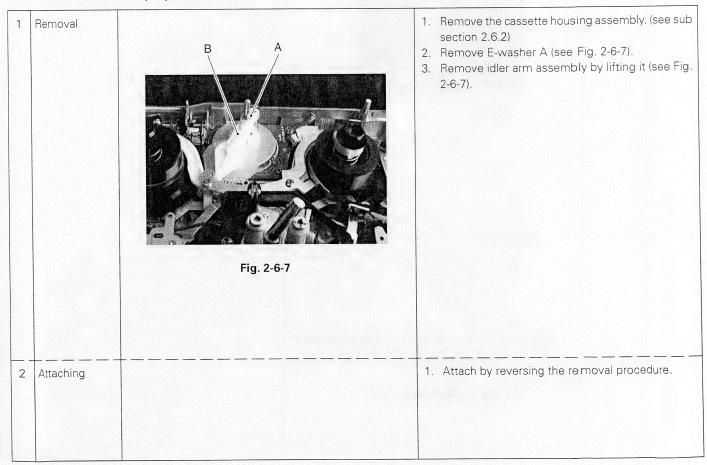


No. Item Reference Diagrams Procedure	
네 경영에 보고 아파워 한다면 함께 이를 가고 있는데 되고 있다면 말을 하는데 하는데 하면 없었다면 하는데	

2.6.3 Belt replacement

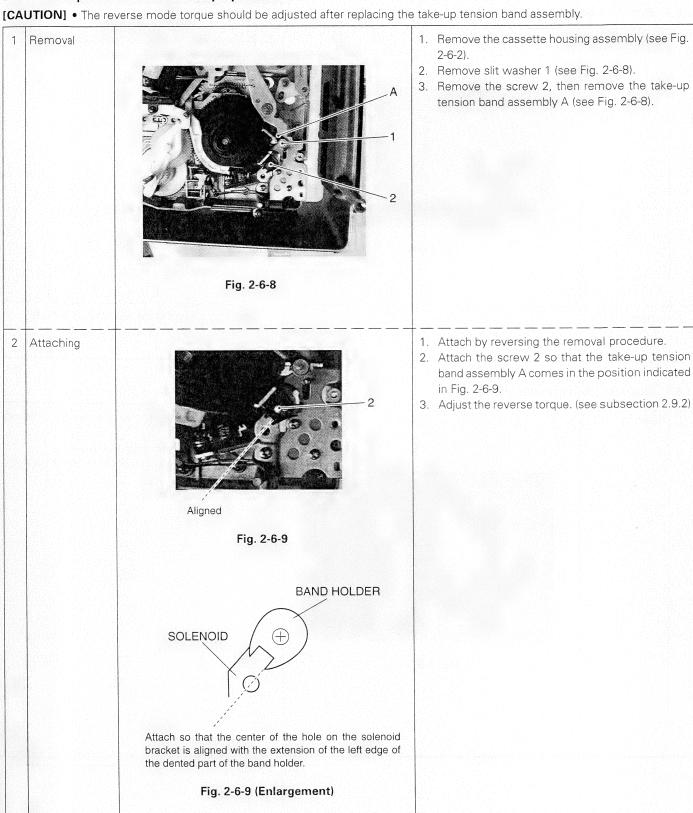
1	Removal	A A A A A A A A A A A A A A A A A A A	1. Remove the MAIN board. (see sub section 1.2.6) 2. Remove belt A (see Fig. 2-6-6).
2	Attaching		1. Attach by reversing the removal procedure.

2.6.4 Idler arm assembly replacement



No	. Item	Reference Diagrams	Procedure
		가게 되는 것을 받는 것이 되었다. 그는 것이 되었다면 되었다. 그는 것이 되었다면 되었다. 그는 것이 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면	성분하다 그리다 하시는 그 아이는 사람은 마르 마르스 프라그램이다.

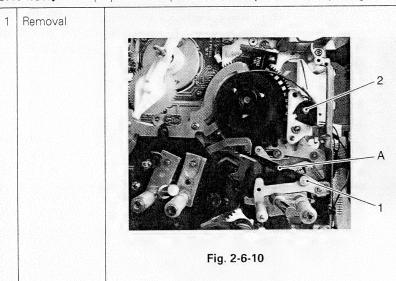
2.6.5 Take-up tension band assembly replacement



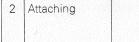
No	. Item	Reference Diagrams	Procedure

2.6.6 Supply tension band assembly replacement

[CAUTION] • The play mode torque should be adjusted after replacing the supply tension band assembly.



- Remove the cassette housing assembly (see Fig. 2-6-2).
- 2. Remove slit washer 1 (see Fig. 2-6-10).
- 3. Remove the screw 2, then remove the supply tension band assembly A (see Fig. 2-6-10).



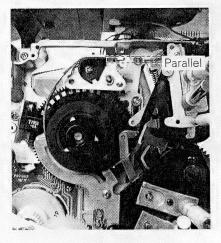
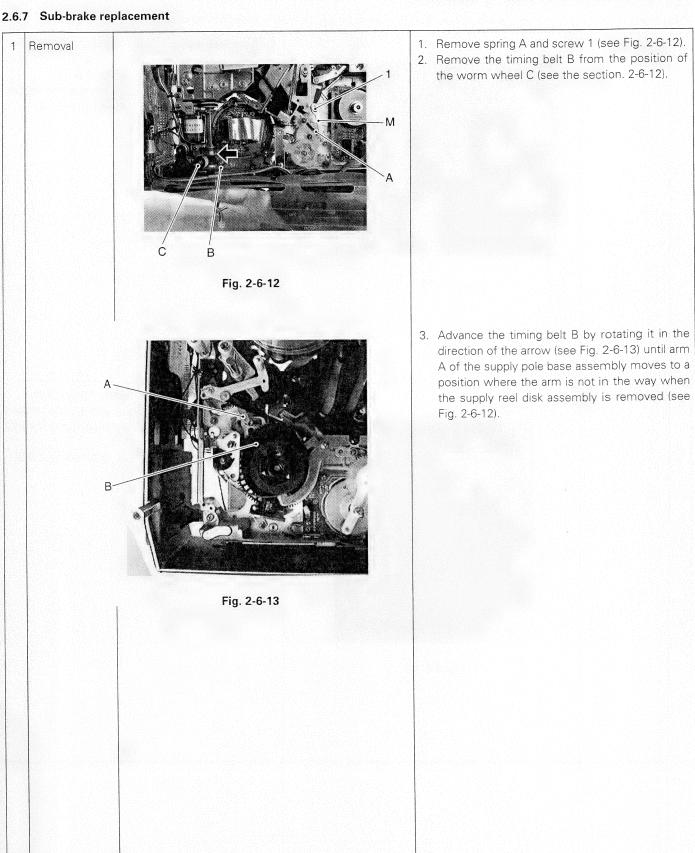


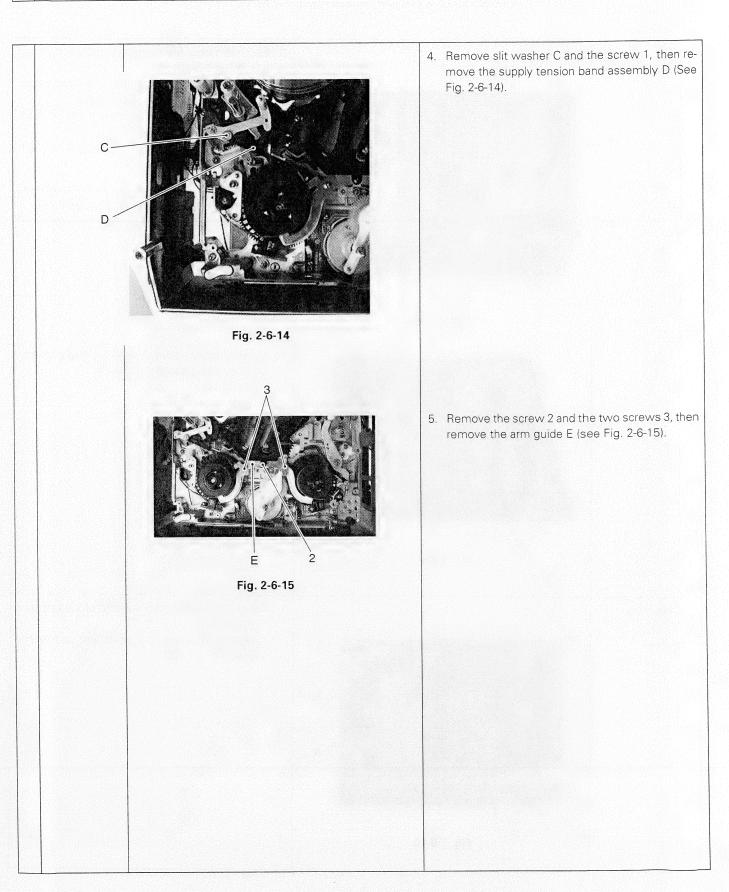
Fig. 2-6-11

- 1. Attach by reversing the removal procedure.
- 2. Attach the screw 2 so that the supply tension band assembly A comes in the position indicated in Fig. 2-6-11.
- 3. Adjust the play torque. (see sub section 2.9.3)

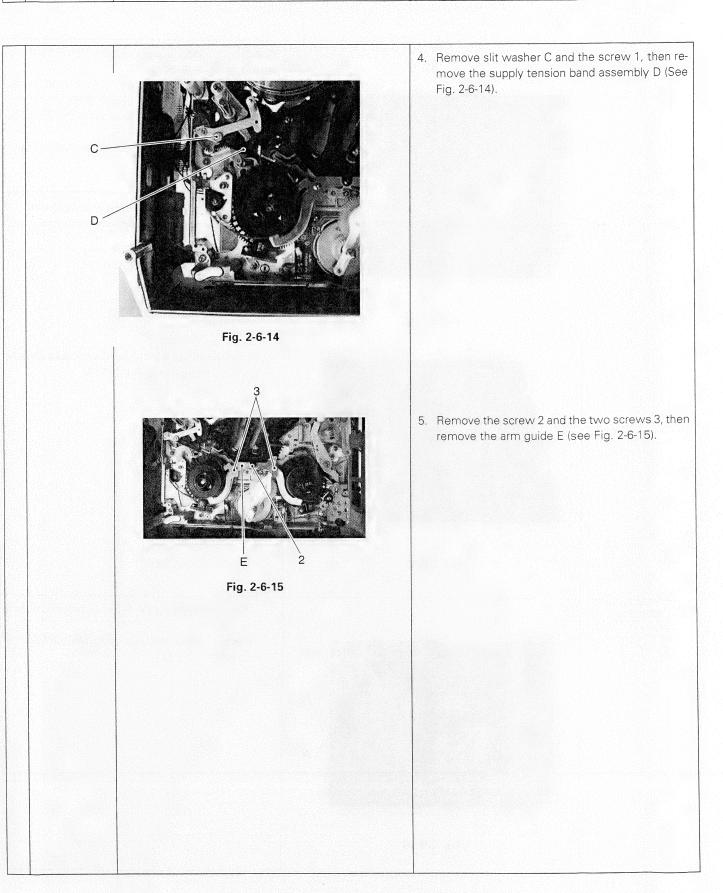
F			등 사용 통상 보는 경우는 보통 등을 보고 있었다. 이 분들은 사용을 하는 것이다. 1988년 - 1988년	
1	Vo.	Item	Reference Diagrams Procedure	



N	10.	ltem	Reference Diagrams	Procedure



No.	ltem	Reference Diagrams	Procedure



2.7 PERIODICAL MAINTENANCE AT EVERY 2000 HOURS

2.7.1 2000-hour periodical maintenance flowchart

Fig. 2-7-1 shows the procedure of the periodical maintenance operation to be performed after every 2000 hours of operation.

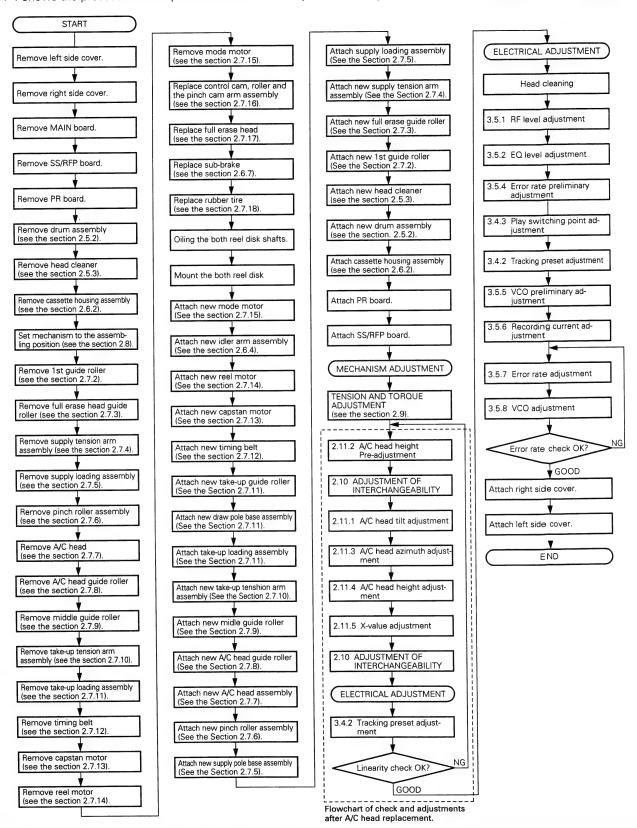


Fig. 2-7-1 2000-Hour Periodical Maintenance Flowchart

No.	Item	Reference Diagrams	Procedure

2.7.2 1st guide roller replacement

2.7.	2.7.2 1st guide roller replacement				
1	Removal	A	 Remove slit washer A (see Fig. 2-7-2). Remove 1st guide roller B (see Fig. 2-7-2). 		
2	Attaching	Fig. 2-7-2	1. Attach by reversing the removal procedure.		

2.7.3 Full erase head guide roller replacement

[CAUTION] • Check the tape transport system after replacing the full erase head guide roller.

1 Removal	Fig. 2-7-3	 Loosen the set screw 1 (which does not have to be removed) (see Fig. 2-7-3). Remove the full erase head guide roller A by rotating it counterclockwise (see Fig. 2-7-3).
2 Attaching	A B 0 1 Fig.2-7-4	 Attach the full erase head guide roller A by inserting and rotating it clockwise. Attach it so that rubber ring B comes in light contact with the surface (see Fig. 2-7-4). Check the tape transport system. (see subsection 2.11) Tighten the set screws 1 in order to fix the fullerase head guide roller A.

No.	Item	Reference Diagrams	Procedure

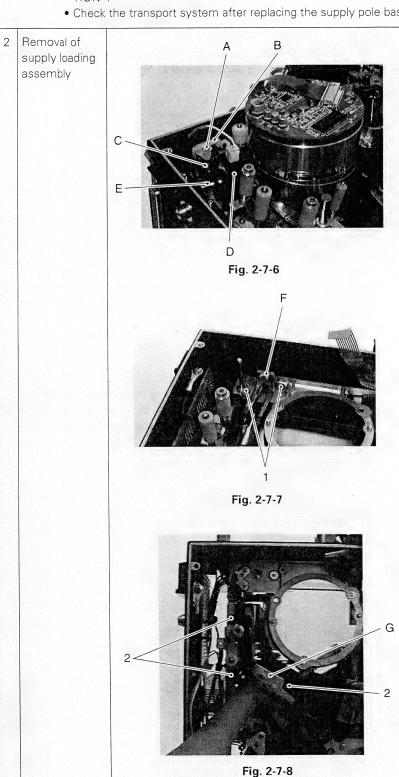
Removal		1. Remove screw A (see Fig. 2-7-5).
C —	B	 Remove the E-washer B then remove spring C (see Fig. 2-7-5). Remove the supply tension arm assembly D by pulling it upward.
	A Fig. 2-7-5	
Attaching		Attach by reversing the removal procedure. Attach the screw A by referring to Section 2.6.6 Adjust the play torque. (see subsection 2.9.3)

No.	Item	Reference Diagrams Procedure

2.7.5 Supply pole base assembly and supply loading gear replacement

[CAUTION] • Before replacement, set the mechanism to the position indicated by Section "2.8 MECHANISM ASSEMBLING POSI-TION".

• Check the transport system after replacing the supply pole base assembly.



- 1. Remove E-washer A, then head cleaner assembly B, spring C, full erase head assembly D and spring E (see Fig. 2-7-6).
- 2. Remove supply tension arm assembly (see the section 2.7.4).

3. Remove the two screws 1 then remove the supply catcher F (see Fig. 2-7-7).

- 4. Remove the three screws 2 while rotating the supply pole base assembly G slightly clockwise (see Fig. 2-7-8).
- 5. Remove the supply loading assembly by lifting

Vo.	Item	Reference Diagrams		Procedure
2	Removal of supply pole base assembly	G	6.	Remove the screw 3; this lets the supply pole base assembly come out (see Fig. 2-7-9).
		3 Fig. 2-7-9		
3	Removal of the supply loading gear	H	7.	Remove the spring H; this lets the supply loading gear J come out (see Fig. 2-7-10).
		J Fig. 2-7-10		
4	Attaching supply loading gear	H	1.	Fit the supply loading gear J onto the shaft ar attach spring H (attach it so that the longer hoo of the spring comes on the gear side, the short hook comes on the arm side, and the opened side of each hook faces the inner side).
		Fig. 2-7-11		

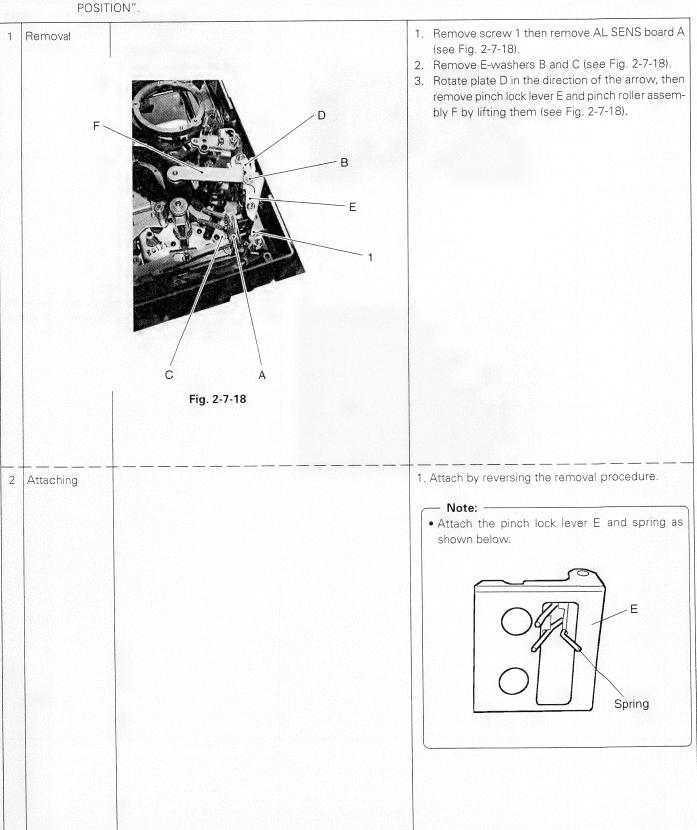
No.	Item	Reference Diagrams	Procedure
5	Attaching the supply pole base assembly	3 Fig. 2-7-12	Attach the supply pole base assembly G using the screws 3. The securing torque should be 0.14 N-m (1.5 kgf-cm) (see Fig. 2-7-12). G
6	Attaching the supply loading assembly	K min	3. Attach the supply loading gear J onto the support K on the deck so that the support fits into the hole on the gear (see Fig. 2-7-13). Attach it so that the gears are meshed as shown in Fig. 2-7-14.
		Fig. 2-7-13	4. Attach the three screws 2 while rotating the supply pole base assembly G slightly clockwise (see Fig. 2-7-15).
		Fig. 2-7-14	2 2 2
			Fig. 2-7-15

No.	ltem	Reference Diagrams	Procedure
			 5. Attach the supply catcher F using the two screws 1 (see Fig. 2-7-16). 6. Attach the supply tension arm assembly (see the section 2.7.4).
		Fig. 2-7-16 C E	7. Attach the spring E, fully erase head assemble D, spring C, head cleaner assembly B and E washer A (see Fig. 2-7-17).
		Fig. 2-7-17	

No.	Item	Reference Diagrams	Procedure	

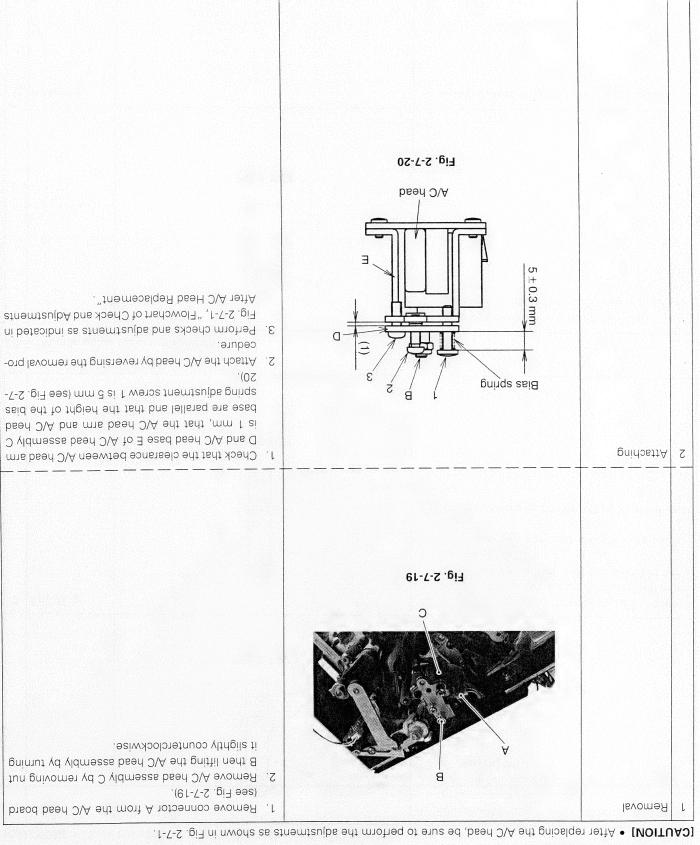
2.7.6 Pinch roller assembly

[CAUTION] • Before replacement, set the mechanism to the position indicated in subsection "2.8 MECHANISM ASSEMBLING POSITION"



Procedure	smargaid əsnərəfəA	ltem	.oN

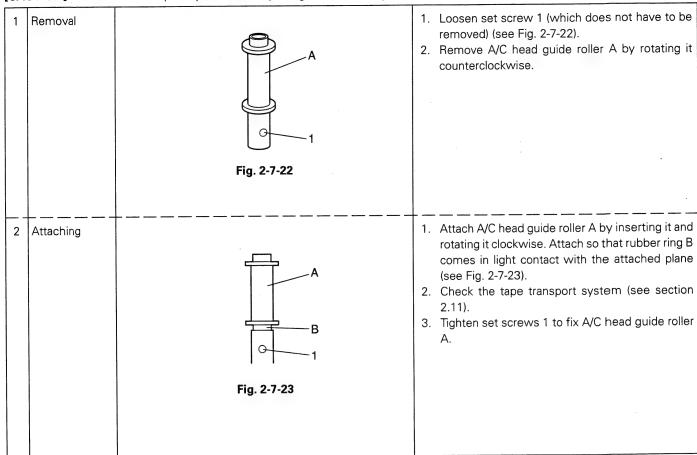
fr.7.7 A/C head replacement



	No.	Item	Reference Diagrams	Procedure
-1				

2.7.8 A/C head guide roller replacement

[CAUTION] • Check the transport system after replacing the A/C head guide roller.



2.7.9 Middle guide roller replacement

2.7.3	2.7.9 Miladie guide roller replacement			
1	Removal	Fig. 2-7-24	 Remove slit washer A (see Fig. 2-7-24). Remove middle guide roller B (see Fig. 2-7-24). 	
2	Attaching		1. Attach by reversing the removal procedure.	

No.	ltem	Reference Diagrams Procedure	

2.7.10 Take-up tension arm assembly replacement

[CAUTION] • Check the transport system after replacing the take-up tension arm assembly.

1 Removal

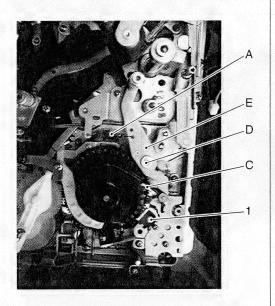


Fig. 2-7-25

- 1. Remove spring A (see Fig. 2-7-25).
- 2. Remove screw 1 (see Fig. 2-7-25).
- 3. Remove E-ring D; this lets the take-up tension arm assembly E come out.

2 Attaching

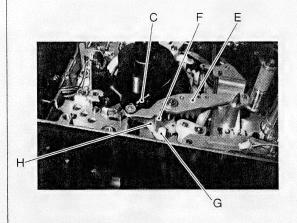


Fig. 2-7-26

- 1. Attach take-up tension arm assembly E so that lever F of the take-up tension arm assembly enters between the two levers G and H as shown in Fig. 2-7-26.
- 2. Attach E-ring D (see Fig. 2-7-25).
- 3. Attach take-up tension band C using screw 1 (see subsection 2.6.5)
- 4. Attach spring A (see Fig. 2-7-25).
- 5. Adjust the reverse torque. (see subsection 2.9.2)

2.7.11 Take-up guide roller, draw pole base assembly and take-up loading assembly replacement

[CAUTION] • Before replacement, set the mechanism to the position indicated by subsection "2.8 MECHANISM ASSEMBLING POSITION".

• Check the transport system after replacing each assembly.

Removal of take-up loading assembly

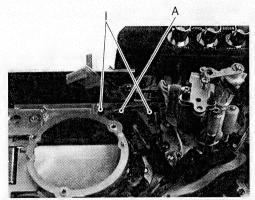
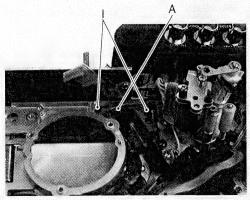


Fig. 2-7-27



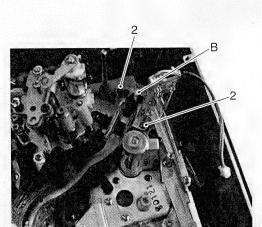


Fig. 2-7-28

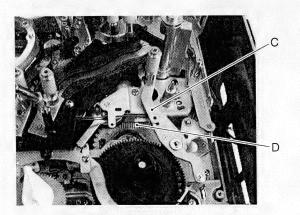


Fig. 2-7-29

- 1. Remove pinch roller assembly (see the section
- 2. Remove supply loading assembly (see the section 2.7.5).
- 3. Remove the three screws 1 then remove takeup catcher A (see Fig. 2-7-27).

- 4. Remove the two screws 2 then remove draw catcher B (see Fig. 2-7-28).
- 5. Remove spring D from take-up tension arm assembly (see Fig. 2-7-29).
- 6. Remove the six screws 3 (see Fig. 2-7-30).
- 7. Remove the two screws 4 which retain draw loading arm assembly; this lets the take-up loading assembly F come out (see Fig. 2-7-30).

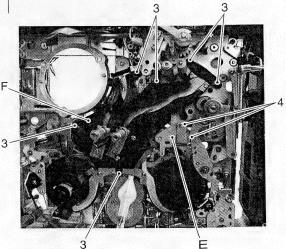


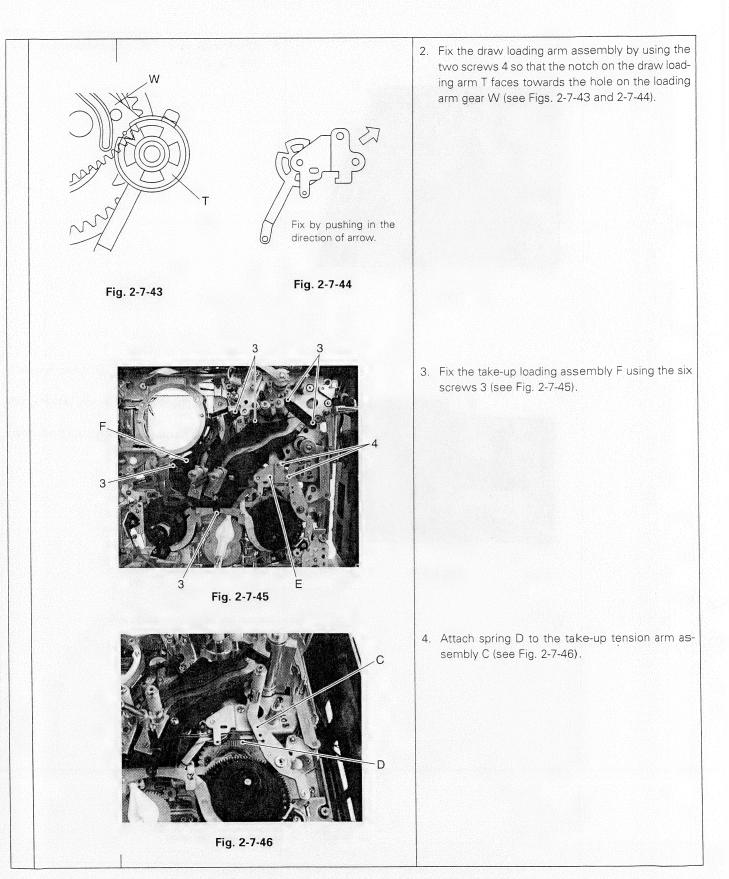
Fig. 2-7-30

No.	Item	Reference Diagrams	Procedure
5	Removal of draw loading gear	PQ	 4. Remove spring P (see Fig. 2-7-34). 5. Remove slit washer Q; this makes it possible to remove draw loading gear R.
 6	Attaching draw loading gear	Fig. 2-7-34	1. Fit draw loading gear R onto the shaft and retain it by using the slit washer Ω (see Fig. 2-7-35).
		Fig. 2-7-35 Sheet metal	2. Attach spring P (so that the longer hook of the spring comes on the gear side, the shorter hook comes on the arm side, and the opened side of each hook faces the inner side) (see Fig. 2-7-36)
	(a) Top view	Remove clearance between the spring and the sheet metal by twisting the spring in the direction of the arrow. (b) Side view Fig. 2-7-36	

Vo.	Item	Reference Diagrams	Procedure
7	Attaching take-up loading gear	N N N N N N N N N N N N N N N N N N N	1. Fit take-up loading gear N onto the shaft (see Fig 2-7-37).
		Fig. 2-7-37 M M (b) Side view Fig. 2-7-38	2. Attach springs L and M (so that the longer hoo of each spring comes on the gear side, the shorte hook comes on the arm side, and the opene side of each hook faces the inner side) (see Fig. 2-7-38).
8	Attaching draw pole base assembly	S T K	1. Position the draw pole base assembly K on t take-up guide rail S, thread the shaft of the dra loading arm assembly T through from the brown side, and secure it by using the E-washe (see Fig. 2-5-39).
		Fig. 2-7-39	

No.	Item	Reference Diagrams	Procedure
9	Attaching the take-up guide roller	G H	2. Attach take-up guide roller H by inserting it and rotating it clockwise. Attach so that rubber ring U comes in light contact with the attached plane (see Fig. 2-7-40-B). H G
		Fig. 2-7-40-A	Fig. 2-7-40-B
10	Attaching the take-up loading assembly	Fig. 2-7-41	1. Attach the take-up loading gear N onto the support V on the deck so that the support fits into the hole in the gear (see Fig. 2-7-41). Attach so that the gears are meshed as shown in Fig. 2-7-42.
		Fig. 2-7-42	

No.	Item	Reference Diagrams	Procedure



No.	Item	Reference Diagrams	Procedure

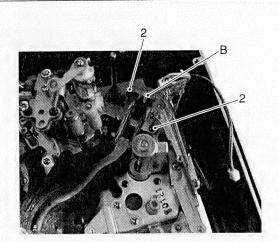


Fig. 2-7-47

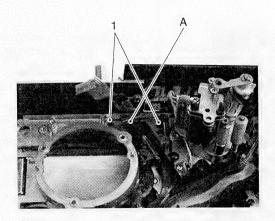


Fig. 2-7-48

5. Attach draw catcher B using the two screws 2 (see Fig. 2-7-47).

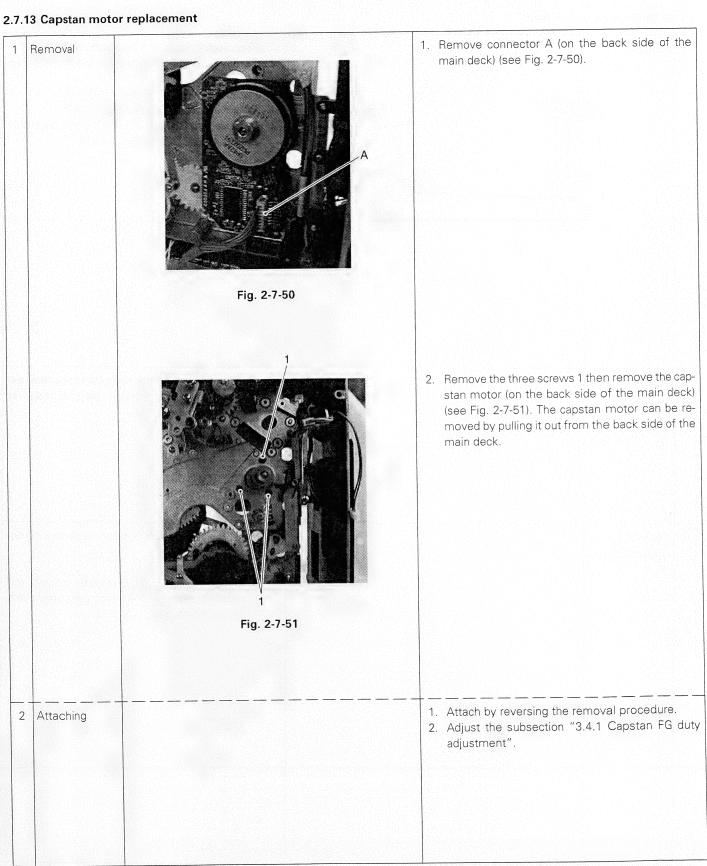
- 6. Attach take-up catcher A using the two screws 1 (see Fig. 2-7-48).
- 7. Attach the supply loading assembly (see the section 2.7.5).
- 8. Attach the pinch roller assembly (see the section 2.7.6).

Procedure	smargaid eonerefeR	mətl	.oN
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2.7.12 Timing belt replacement

Now. Aftach spring A. B) Check that timing belt B is under tension, and tighten the screw 1 so that the current tension is maintained.		adjustment	
1. Adjust the timing belt tension as described be-		noisneT	ε
1. Attach by reversing the removal procedure, except that the screw 1 should be attached after having attached spring A.		Pttaching	2
1. Remove the PR board. (see subsection 1.6.4) 2. Remove spring A, then remove the screw 1 (see Fig. 2-7-49). 3. Remove timing belt B (see Fig. 2-7-49). 4. Remove belt B together with BR arm assembly G. Remove belt B together with BR arm assembly D and belt gear E (see Fig. 2-7-49).	Fig. 2-7-49	levomeA Semoval	l

No	. Item	Reference Diagrams Procedure	



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	No.	Item	Reference Diagrams	Procedure

2.7.14 Reel motor replacement

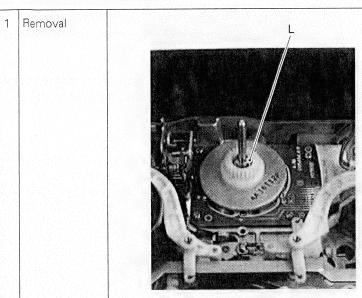


Fig. 2-7-52

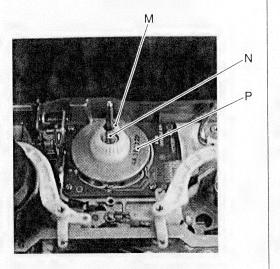


Fig. 2-7-53

- 1. Remove the supply reel disk (see items 1 to 9 of the subsection "2.6.7 Sub-brake replacement").
- 2. Remove the idler arm assembly (see sub section 2.6.4).
- 3. Remove E-washer L (see Fig. 2-7-52).
- 4. Remove washer M and spring N, then remove rotor P (see Fig. 2-7-53).

- CAUTION -

- Be careful when removing the rotor because it is strongly magnetized.
- 4. Remove the four screws 4, then remove the board of the reel motor (the flat wire is fixed by using double-sided adhesive tape) (see Fig. 2-7-54).

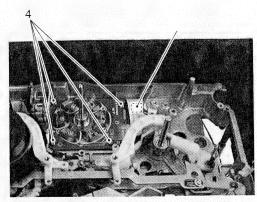


Fig. 2-7-54

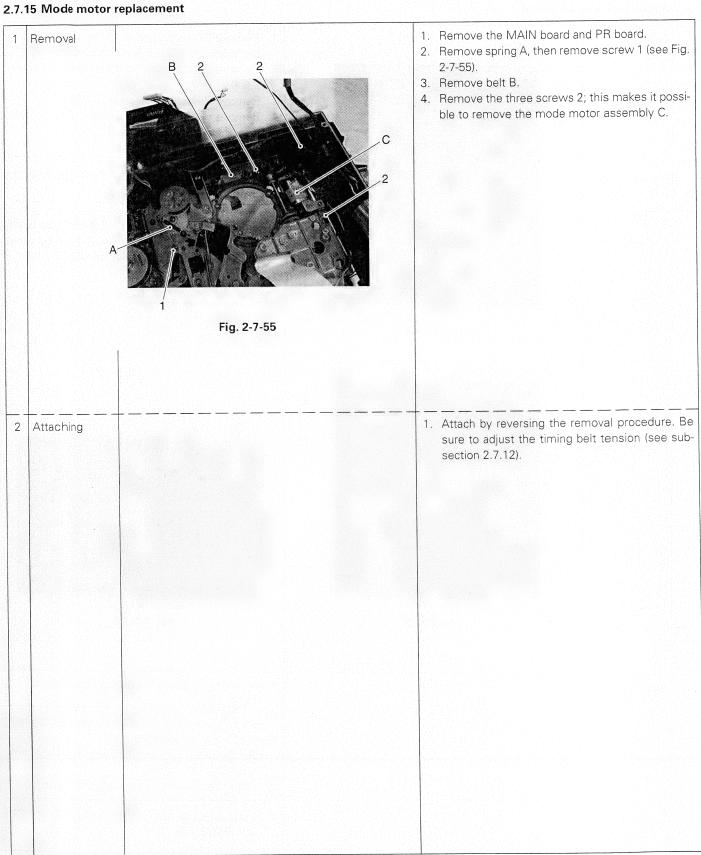
2	Attaching
4	Allacilling
	_

1. Attach by reversing the removal procedure.

- CAUTION -

- Be careful when attaching the rotor because it is strongly magnetized.
- Put the name card or et cetra on the stater and then attach the rotor.
 - After attach the rotor, remove the name card.
- 2. Adjust the subsection "2.9 TENSION AND TORQUE ADJUSTMENTS".

		도 발표하는 것이 되는 것이 되었다. 그렇게 살아 있다는 것이 되었다면 되었다. 그는 사람들이 되었다면 되었다. 그는 것이 되었다는 것이 되었다. 20 12 20 20 20 20 20 20 20 20 20 20 20 20 20	
No	, Item	Reference Diagrams Procedure	



No.	Item	Reference Diagrams	Procedure

K

2.7.16 Control cam, roller and pinch cam arm assembly replacement

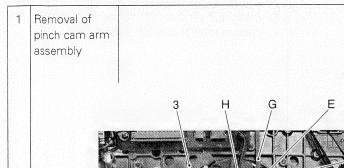
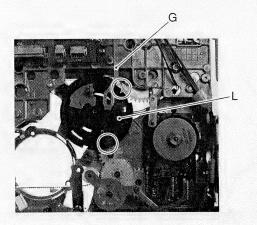


Fig. 2-7-56

D A 3

- 1. Remove supply loading assembly (see subsection 2.7.5).
- 2. Remove take-up loading assembly (see subsection 2.7.11).
- 3. Remove connector A (see Fig. 2-7-56).
- 4. Remove springs B and C (see Fig. 2-7-56).
- 5. Remove screw 1, then remove MODE SENS board D (see Fig. 2-7-56).
- 6. Remove E-washers E and F (see Fig. 2-7-56).
- 7. Remove screw 2 and three screws 3 (see Fig. 2-7-56).
- 8. While lifting eject rod G, remove cam bracket assembly H and arm gear (L) assembly J (see Fig. 2-7-56).
- 9. Pinch cam arm assembly K is also removed at the same time as the above.





В

Fig. 2-7-57

10. While lifting the eject rod G, remove the control cam L (see Fig. 2-7-57).

Item	Reference Diagrams	Procedure
Removal of roller	M N N Fig. 2-7-58	Remove E-washer M; this makes it possible to remove roller N (see Fig. 2-7-58).
Attaching roller		Attach the roller N by reversing the removal procedure.
Attaching the control cam	Fig. 2-7-59	2. Place arm gear (R) P in the assembling position (so that the hole Q of arm gear (R) P is aligned with the hole on the main deck) (see Fig. 2-7-59).
	Align. Align.	3. Attach the control cam L in the assembling position (by aligning the small D marking on the cam idler gear S with the D marking on the control cam L) (see Fig. 2-7-60). Also insert stud R of the arm gear (R) into the groove on the control cam.
	Removal of roller Attaching roller Attaching the control cam	Removal of roller M N Fig. 2-7-58 Attaching roller Attaching the control cam Fig. 2-7-59

۱o.	Item	Reference Diagrams	Procedure
6	Attaching pinch cam arm assembly	T O H	4. Place cam bracket assembly H and arm gear (L) assembly J in the assembling positions (see Fig. 2-7-61). (Hole T on cam bracket J should be aligned with the hole on arm gear (L) assembly H.)
		Fig. 2-7-61	5. Attach pinch cam arm K (see Fig. 2-7-62).
		Fig. 2-7-62	6. Tighten two screws 3 and 2 (see Fig. 2-7-63).
		Fig. 2-7-63	

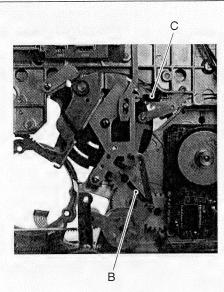


Fig. 2-7-64



Fig. 2-7-65

7. Attach springs B and C (see Fig. 2-7-64).

- 8. Secure the adjust lever assembly U using the screw 3 (see Fig. 2-7-65).
- 9. Attach S-plate assembly V and pinch cam arm assembly K using E-washer F.

- CAUTION -

- The pinch cam arm assembly must be attached as shown in the diagram. If it is attached as shown by the dotted lines in Fig. 2-7-65, it will be impossible to crimp the pinch roller.
- 10. Attach eject rod G using E-washer E (see Fig. 2-7-66).
- 11. Attach MODE SENS board D using the screw 1 (see Fig. 2-7-66).
- 12. Attach the connector A (see Fig. 2-7-66).
- 13. Attach the take-up loading assembly (seesub section 2.7.11).
- 14. Attach the supply loading assembly (see subsection 2.7.5)

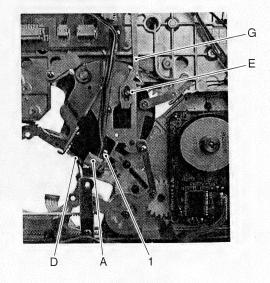
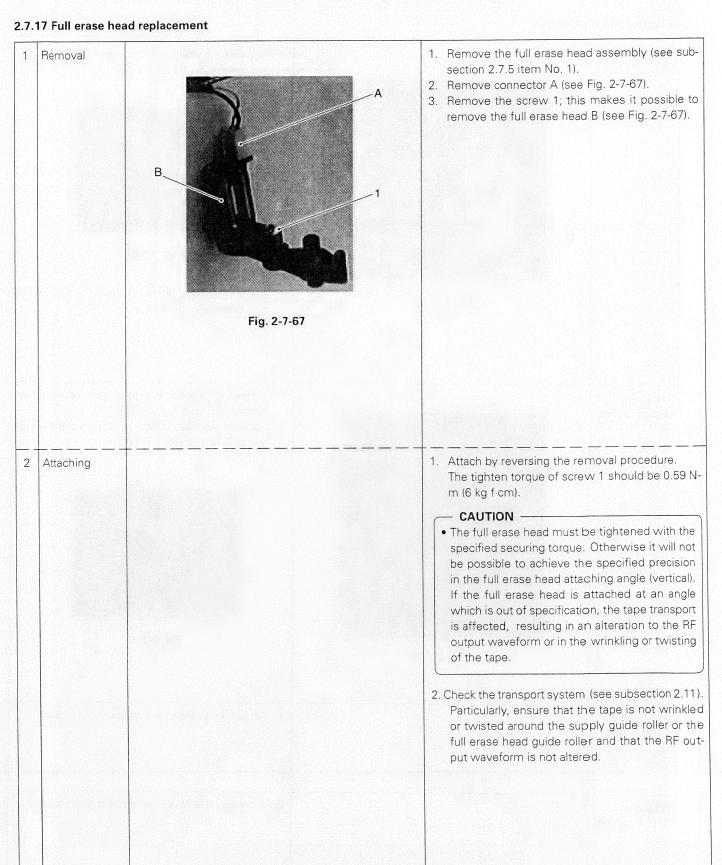


Fig. 2-7-66

No.	Item	Reference Diagrams	Procedure



No. Item	Reference Diagrams	Procedure

	Removal of supply rubber tire	A Fig. 2-7-68	 Remove slit washer A then remove supply tension band B (see Fig. 2-7-68). Fig. 2-7-69 Remove supply rubber tire C from the supply reel disk D (see Fig. 2-7-69).
2	Removal of take-up rubber tire	Fig. 2-7-70	 3. Remove slit washer E then remove take-up tension band F (see Fig. 2-7-70). 4. Remove take-up rubber tire G from the take-up reel disk H (see Fig. 2-7-71). Fig. 2-7-71
3	Attaching supply rubber tire		Attach by reversing the removal procedure.
4	Attaching take-up rubber tire		2. Attach by reversing the removal procedure.

2.8 MECHANISM ASSEMBLING POSITION

Some mechanical parts of this unit do not function correctly unless they are attached with the specified positioning after replacement. The position of the mechanism that makes possible the attachment or checks of the positioning of these parts is referred to as the assembling position. The unit has been designed so that the markings on the gears are aligned correctly when the mechanism is in this position. The methods for placing the mechanism in the assembling position include "placing gears by turning them manually as shown in Fig. 2.8.1", and so on. This section describes the attaching positions of the gears when the mechanism is in the assembling position.

2.8.1 Pinch idle gear, connect gear, cam idle gear

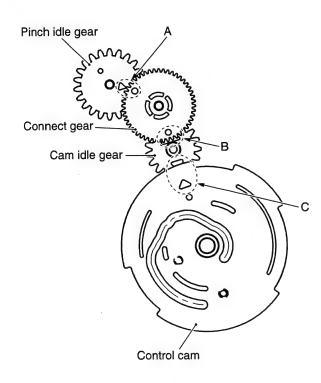


Fig. 2-8-1 Gear Positioning 1 (Bottom Panel Side)

- A : Align the \triangle marking on the pinch idle gear and \circ marking on the connect gear.
- B: Align the larger \triangle marking on the cam idle gear with the \circ marking on the connect gear.
- C : Align the smaller \triangle marking on the cam idle gear with the \triangle marking on the control cam.

2.8.2 Arm gear (L), loading arms (L) (R), Geneva gear

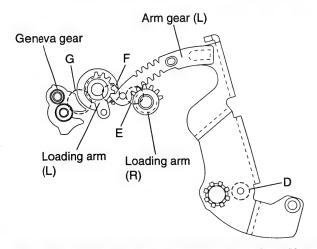
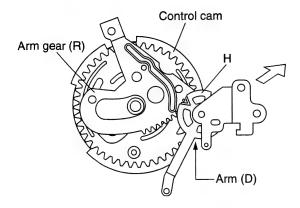


Fig. 2-8-2 Gear Positioning 2 (Perspective View from Above)

- D: The hole on the arm gear (L) should be aligned with the hole on the part below it when viewed from below.
- E: Align the gear end of the loading arm (R) with the end of the groove on the arm gear (L).
- F: Engage the gear end of the loading arm (L) with the end of the arm gear (L) as shown in the diagram.
- G: Align the R section of the Geneva gear with the loading arm (L).

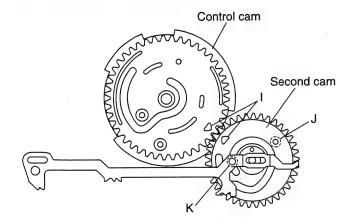
2.8.3 Arm gear (R), arm (D)



H: Align the hole on the arm gear (R) with the notch on the arm (D). The bracket of the arm (D) should be pushed in the direction of the arrow before securing the screw.

Fig. 2-8-3 Gear Positioning 3 (Perspective View from Above)

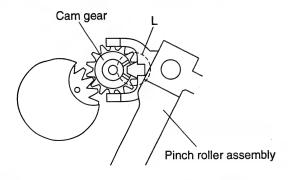
2.8.4 Second cam, direction plate



- I : Align the \triangle markings on the control cam and second cam. J : The holes on the second cam and the main deck should be
 - aligned.
 - K: Insert the stud of the direction plate into the groove on the inner side of the second gear.

Fig. 2-8-4 Gear Positioning 4 (Perspective View from Above)

2.8.5 Pinch roller assembly, cam bracket



L : Orient the notch on the cam gear toward the right. Insert the stud of the pinch roller assembly into the notch on the cam gear.

Fig. 2-8-5 Gear Positioning 5 (Top Side View)

No.	Item	Measuring instrument & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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2.9 TENSION AND TORQUE ADJUSTMENTS

The rotation torque of the reel motor can be adjusted in the DIAG mode by using the Group 7 adjustment menus. To protect the cassette torque meter, the tape is transported by the capstan motor drive during the torque adjustment operations, even when the FF/REW button is pressed.

Ven when u	ne FF/REW butto			
1 Unload torque adjust	meter	e torque DIAG mode "61 :	© Cassette torque meter: Supply side, indicated value ① "OPERATE" + "FF": Torque Up "OPERATE" + "REW" : Torque Down ☆ 0.015 N·m (150 gf·cm ± 20 gf·cm)	 Execute DIAG mode " [] : " (see the section 1.9). Install the cassette torque meter. Press the REW button. (Rotates the supply reel at the unloading torque.) While holding the OPERATE button depressed, press the FF or REW button to adjust the supply torque within the specified range. Press the DATA SET button. The adjusted data is stored in the memory and " [] : [] . [] xx " is displayed (where "xx" shows the adjusted data).
2 Rever torque adjust Take-up tension a	ment PUJ428	e torque DIAG mode "5F:	© Cassette torque meter: Supply side, indicated value ① "OPERATE" + "FF": Torque Up "OPERATE" + "REW" : Torque Down ☆ 0.01 N·m (110 gf·cm ± 20 g-cm)	 Execute DIAG mode "5F:" (see the section 1.9). Install the cassette torque meter. Press the REW button. (Initiates the search reverse x 1 mode.) While holding the OPERATE button depressed, press the FF or REW button to adjust the supply torque within the specified range. Press the DATA SET button. The adjusted data is stored in the memory and "5F:Ed: III xx' is displayed (where "xx" shows the adjusted data).
		own U up	© Cassette torque meter: Take-up side, indicated value ① Retaining screw of the take-up tension band ☆ 0.0035 N·m (36 ± 5 gf·cm) Take-up tension band holder Screw	 Check that the take-up reel disk torque of the cassette torque motor is at the adjustment level. If the value is not within the adjustment level range, remove the cassette torque meter and adjust the installation angle of the take-up tension band (see Fig. 2-9-1). Install the cassette torque meter again and press the REW button. Repeat steps 6 to 8 above to adjust within the correct adjustment range. Press the RESET button to terminate the adjustment.
		Fig. 2-9-1		

No. Item Measuring instrument & Mode Input signals Mode Mode Adjustment level (公) Adjustment procedu	re
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3	Play torque adjustment	Cassette torque meter PUJ42881	DIAG mode	 © Cassette torque meter: Take-up side, indicated value ① "OPERATE" + "FF": Torque Up "OPERATE" + "REW": Torque Down ☆ 0.01 N·m (100 gf·cm ± 20 gf·cm) 	 Execute DIAG mode "52:" (see the section 1.9). Install the cassette torque meter. Press the PLAY button. (Rotates the take-up reel at the forward transport torque.) While holding the OPERATE button depressed, press the FF or REW button to adjust the take-up torque within the specified range. Press the DATA SET button. The adjusted data is stored in the memory and "52:5d:00 xx" is displayed (where "xx" shows the adjusted data).
		O		 © Cassette torque meter: supply side, indicated value ⊕ Retaining screw of the supply tension band ☆ 0.0036 N·m (37 ±5 gf·cm) 	Check that the supply reel disk torque of the cassette torque meter is at the adjustment level.
			ply tension arm		justment.
	band	rew Fig. 2	up		

2.10 ADJUSTMENT OF INTERCHANGEABILITY

- [CAUTION] -

• Proceed to the following adjustment after having completed subsection "3.5 SERVO SYSTEM ADJUSTMENT" and subsection "2.9 REEL SERVO CIRCUIT ADJUSTMENT".

2.10.1 Interchange ability adjustment flowchart

Fig. 2-10-1 shows the flowchart of the interchangeability adjustment.

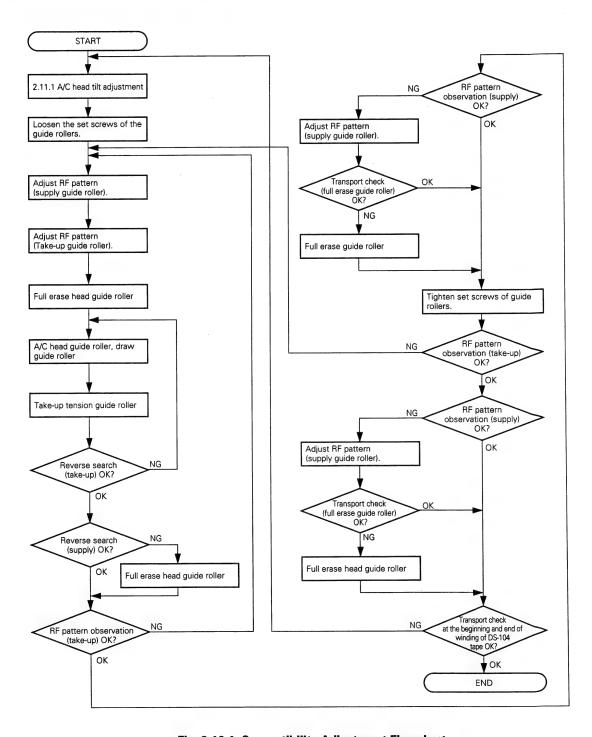
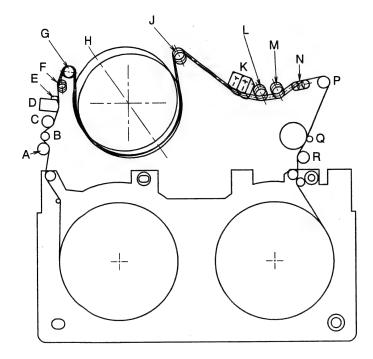


Fig. 2-10-1 Compatibility Adjustment Flowchart

2.10.2 Check of tape transport system

Each guide roller has flanges above and below it in order to limit the tape transport. Tape limiting by means of the upper flange is referred to as upper edge limitation and that achieved by means of the lower flange is referred to as lower edge limitation. The tape is usually stabilized during transport by alternately applying upper and lower edge limitations. As a lack of limitation makes the tape transport unstable, please apply limitations as shown in the following table.



Symbol	Name	Limitation	
А	1st guide roller	Non-limit	
В	Supply tension pole	Non-limit	
С	Full erase head guide roller	Tape's lower edge limit	
D	Full erase head	Non-limit	
E	Tape scraper	Non-limit	
F	Supply slant pole	Non-limit	
G	Supply guide roller	Tape's upper edge limit	
H	Drum assembly	Tape's lower edge limit	
J	Take-up guide roller	Tape's upper edge limit	
K	A/C head assembly	Non-limit	
L	A/C head guide roller	Tape's lower edge limit	
М	Middle guide roller	Non-limit	
N	Take-up slant pole	Non-limit	
Р	Draw guide roller	Tape's upper edge limit	
Q	Capstan	Non-limit	
R	Take-up tension roller	Non-limit	

Fig. 2-10-2

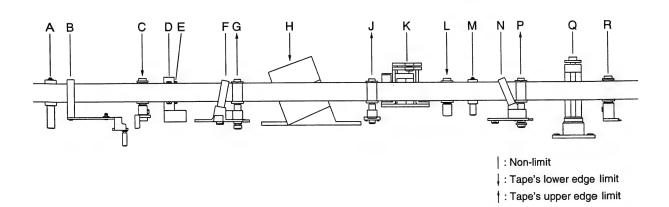
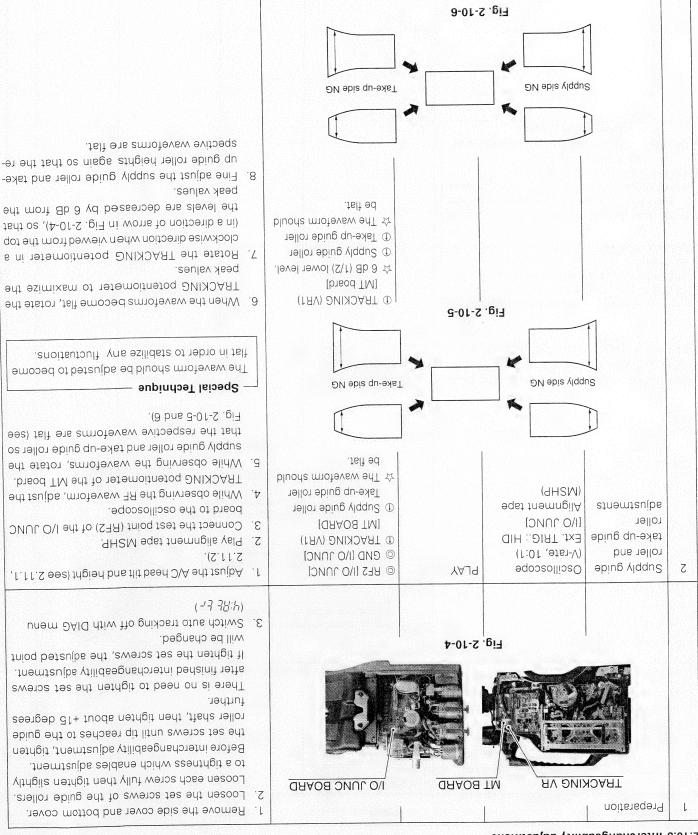


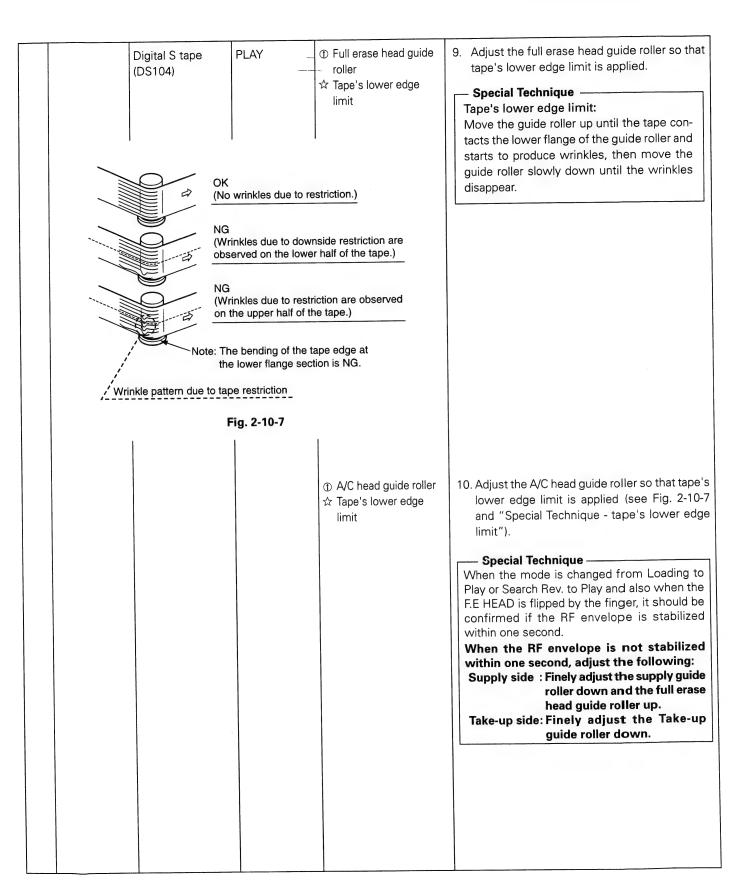
Fig. 2-10-3 View from Cassette Tape Insertion Side

Adjustment procedure	(◎) iniog prinuseaM (①) stred framsulbA (☆) level tramsulbA	əpoM	Measuring & Instrument Slangis Iuqul	mətl	.oN
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2.10.3 Interchangeability adjustment



No.	ltem	Measuring instrument & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure



No.	ltem	Measuring instrument & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
	D	Digital Carra	DI AV	① Draw guide roller	11. Adjust the draw guide roller so that tape's
3	Draw guide roller (DS104) Digital S tape (DS104) OK (No wrinkles due to restriction.) NG (Wrinkles due to upside restriction are observed on the upper half of the tape.) NG (Wrinkles due to restriction is observed on the lower half of the tape.) Note: The bending of the tape edge at the upper flange section is NG.			Tape's upper edge regulation: Move the guide roller down until the tape contacts the upper flange of the guide roller and starts to produce wrinkles, then move the guide roller slowly up until the wrinkles disappears	
	/ Wrinkle pattern due to tape restriction				
	Fig. 2-10-8			⊕ A/C head guide roller☆ Downside restriction.	12. Check that tape's lower edge regulation is applied to the A/C head guide roller. If there is no tape's lower edge regulation, adjust the A/C head guide roller height (step 10) there repeat steps 11 and 12.
4	Take-up tension roller adjustment	Digital S tape (DS104)	PLAY	 Take-up tension roller Take-up tension roller No wrinkles 	13. Adjust the take-up tension roller so that the tape is located between its upper and lower flanges and no wrinkles are observed on the tape.
	NG (Wrinkles due to an ups observed on the upper to the u			striction.)	

Wrinkle pattern due to tape restriction

Fig. 2-10-9

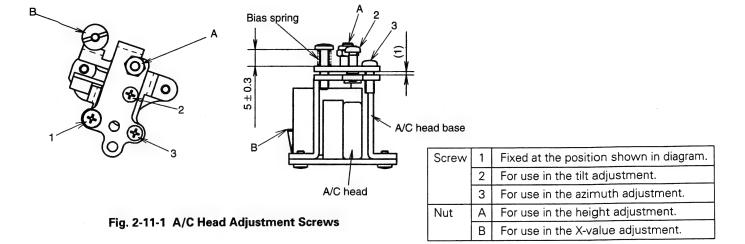
No.	Item	Measuring instrument & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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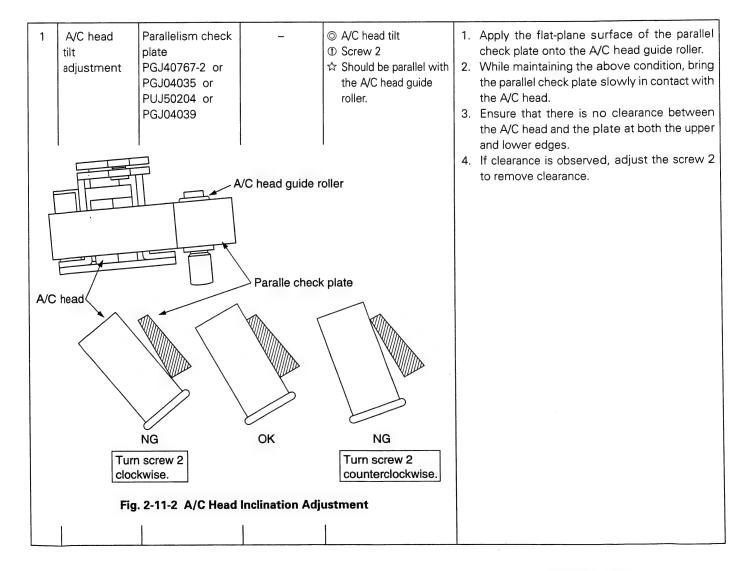
5	Check	Digital S tape (DS104)	Search, REV	 ◎ RF1[I/O JUNC] ◎ Between pinch roller and draw guide roller ① Draw guide roller ☆ No twist and no wrinkles ◎ Full erase head guide roller ① Full eerase head guide roller ☆ No twist and no wrinkles 	 14. Initiate reverse search mode. 15. Check that the tape is not twisted between the pinch roller and the draw guide roller and that it is not wrinkled by the A/C head guide roller. If tape twist or wrinkles are observed, fine adjust the draw guide roller height then check the adjustments in steps 11 to 13. 16. Check that the tape is not wrinkled by the full erase head guide roller. If tape wrinkles are observed, fine adjust the full erase head guide roller height.
		Digital S tape (DS124)	PLAY	 Take-up tension roller Take-up tension roller No damage 	 17. Playback the digital S tape. 18. Check that the tape is not damaged by the Take-up tension roller. If tape damage is observed, fine adjust the Take-up tension roller height. 19. Initiate PLAY mode. 20. Observe the RF waveform and check that it is flat.
		Alignment tape MSHP Digital S tape (DS104)	PLAY	⊚ RF2 [I/O JUNC]	 21. Check that the positive going of the RF waveform is normal between loading and play and between reverse search and play. If it is abnormal, restart adjustments from step 7. 22. Tighten the set screws of the guide rollers. 23. Perform the same checking as for steps 20 and 21. 24. Using the digital S tape (DS104), initiate play at the beginning of winding, initiate reverse search at the end of winding, and check that the tape is not twisted or wrinkled by the guide rollers. If tape twist or wrinkles are observed, review the adjustments from step 1 and repeat the required adjustments.

No.	Item	Measuring instrument & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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2.11 A/C HEAD ADJUSTMENTS

As the A/C head adjustments affect other adjustments in some degree, the adjustments should be repeated until all of the standards are met simultaneously.





No.	ltem	Measuring instrument & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
2 F	A/C head height Pre-adjustment CTL headig. 2-11-3 A/C	The wri	guide roller e tape should nonkled or bent on age section. minary Setting	the	 Initiate PLAY mode. Check that the tape is running along the lower flange of the A/C head guide roller. If tape wrinkle is observed, adjust the roller height to remove it. Adjust nut A to the adjustment level.
3	A/C head azimuth adjustment Level Fig. 2-4	Oscilloscope, alignment tape, MHP: for U-ver. MHPE: for E-ver.	PLAY mode, DIAG mode "58:" Phase Waveforms	 TP731 (CH-1) [AUDIO & LCD] TP732 (CH-2) [AUDIO & LCD] or LINE OUT (XLR 5-pin) [REAR PANEL] Screw 3 CH1 and CH2 should be in-phase and their levels should be maximum. 	 Execute DIAG mode "58:" (see subsection 1.9). Initiate PLAY mode. Check that the tape is running along the lower flange of the A/C head guide roller. If tape wrinkle is observed, adjust the roller height to remove it. Adjust the screw 3 so that the CH1 and CH2 audio output levels are at the level. Check the A/C head tilt. If the angle is erroneous, re-adjust it and adjust the azimuth again (see sub section 2.11.1).
4	CH2 (Oscilloscope alignment tape MBA-3: for U-ver. MBAE-3: for E-ver.	~	 ▼TP731 (CH-1) [AUDIO & LCD] TP732 (CH-2) [AUDIO & LCD] or LINE OUT (XLR 5-pin) [REAR PANEL] Nut A Adjust the CH1 and CH2 level to minimize first, then turn the nut A to the clockwise (45 degree). 	1

	Fig. 2-11-5	
	I/O JUNG BOARD	
	Fig. 2-11-6 Audio Output Waveforms	
	GOOD	84T 역유국
		오 <mark>q</mark> T 1국유
1. Remove the bottom cover (see subsection 1.2.4). 2. Execute DIAG mode " [].;" (see subsection 1.9). 3. Initiate PLAY mode. 4. Adjust nut B for the adjustment level.	Oscilloscope PLAY mode © TP2: RF1 TP5: RFP alignment tape " £7:" All I/O JUNC] (MSHP-X) (MSHP-X) TP6: FRP TP6: FRP (MSHP-X) The RF1 waveform should be maximum and the phases at the PRP and the phases at the PRP and the	əulsv-X Z

(⊚) tnioq pointseaM (⊕) streq tnemtsujbA (☆) level tnemtsujbA

Adjustment procedure

Measuring instrument & lnput signals

Item

.oN

Mode

No.	ltem	Measuring instrument & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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2.12 CHECK OF LINEARITY

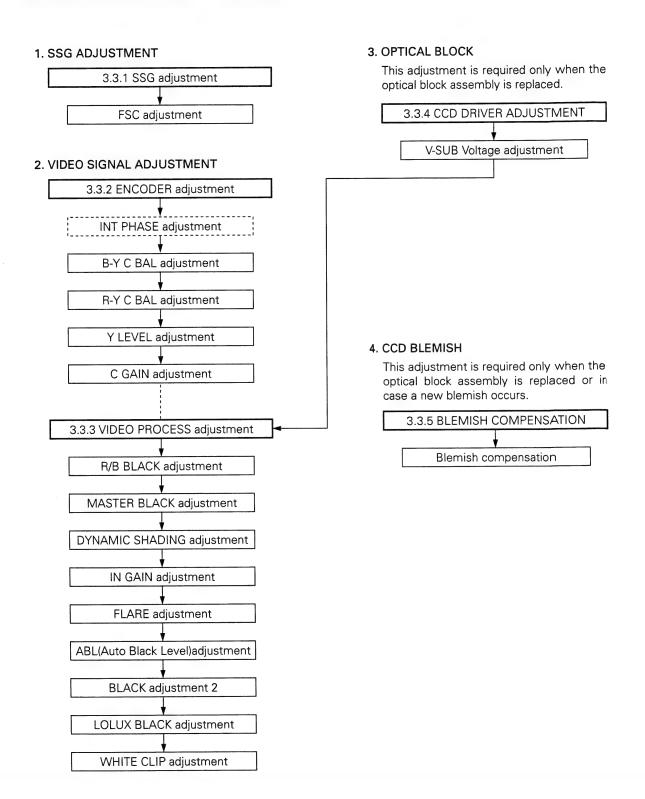
[CAUTION] • Proceed to the linearity check after having completed the mechanism adjustments and the tracking preset adjustment.

1	Connection	PC Linearity checker: KLJ0171 RS-232C connec- tion cable: KLJ0123-2 Alignment tape "MSHP" "MSHP-X"	DIAG mode (There is no need to select the menu.)	© TRM [I/O JUNC] ◎ HID [I/O JUNC]	 Connect the cable from the A/D card to the TRM(signal) and HID (trigger) test point on top of the I/O JUNC board. Remove the cap located on the side of the DY-90 and connect the pin jack of the RS-232C cable(KLJ0123-2) to the service connector. Connect the 4 pin connector to the DC out connector on the rear side. For the connection of other cables, refer to the instruction manual provided with the linearity checker. Boot the PC and set the DY-90 to the DIAG mode.
	Not	A/D ca RS-2	32C connector KLJ0123		• 6 (=)
		ı	Fig.	2-12-1	1
2	Check			☆ No more than 5 μm	 Execute the linearity check program on the PC. For the operating instructions, refer to the instruction manual provided with the A/D board. Check that the measured linearity value is no more than 5 micro. If it is more than 5 μm, perform the subsection "2.10 ADJUSTMENT OF INTERCHANGEABILITY" again, and then measure the linearity again. Note: Install all external equipment and place the set in a vertical position before carrying out checking.

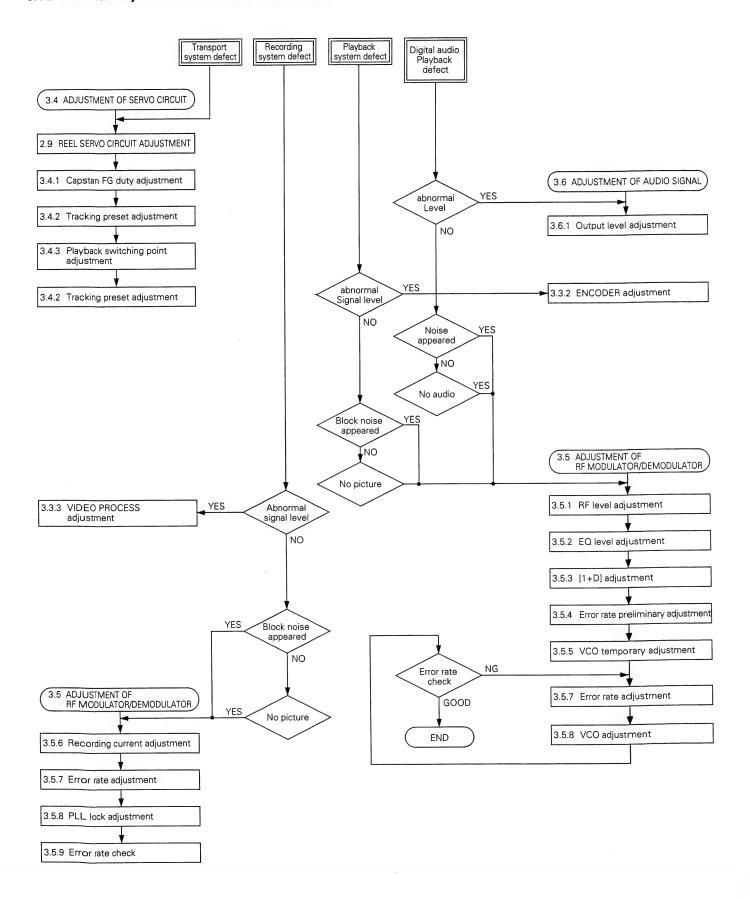
SECTION 3 ELECTRICAL ADJUSTMENT

3.1 ELECTRICAL ADJUSTMENT FLOWCHART

3.1.1 Electrical adjustment flowchart for camera section



3.1.2 Electrical adjustment flowchart for video section



3.2 REQUIRED MEASURING INSTRUMENTS FOR ADJUSTMENT, STANDARD SETUP

3.2.1 Precautions on electrical adjustment

- The electrical adjustment procedures described in this chapter apply to the cases that replacement of video heads or expendable parts of the mechanism needs electrical adjustment, there is something abnormal in output video signal, and there is a failure in the electrical circuit.
 - Before proceeding to adjust an item appearing in this chapter, make sure to check that the objective item is out of the specifications.
- For any item or part that needs mechanism adjustment before electrical adjustment, check to see whether it has undergone required mechanism adjustment or not before electrical adjustment.
- Check and adjustment require this set to be equipped with all the boards.

- 4. Don't cut off the power supply to this set by turning off the power switch or other means whenever the tape is travelling, otherwise the tape may be damaged.
- When a warning message appears, immediately turn off the power switch, and then investigate the cause and remove it. Before trying to turn on the set again, confirm that the cause of the warning message has completely been removed.
- 6. Start electrical adjustment at least 10 minutes after the VCR has been turned on.
 - Regarding an oscilloscope to be used for measurement, use the 10:1 probe.

3.2.2 Test instruments required for adjustment

Instrument	Condition	Instrument	Condition
Oscilloscope	Capable of measuring 100MHz or higher bands and calibrated.	DC power supply	AA-P250 or equivalent
Oscilloscope *	Capable of measuring 300MHz or higher bands and calibrated. * (This oscilloscope is used in Section 3.5, "ADJUST-MENT OF RF MODULATOR/DEMODULATOR CIRCUIT").	Lighting apparatus Color video monitor TV	3,200K halogen lamp
Frequency counter	Readable in 8 or more digits. Constancy of 0.1ppm/ 1×10 ⁻⁷ or more at 0°C to 40°C.	Waveform monitor (WFM)	
Digital voltmeter	Input impedance of $10M\Omega$ or more, and calibrated.	Digital S tape	For use in self-record-ing/playback.
Vectorscope	Must be calibrated, and capable of measuring 0-setup signals.	Lens	Fujinon A16 × 9B12U or equivalent
Audio tester	Must be calibrated.	Viewfinder	VF-P115 or equivalent
Spectrum analyzer	Must be calibrated. (This is not required when the BR-D92, BR-D80 or BR-D85 is available.)	Viewiniuei	VI -I 110 of equivalent

3.2.3 Special implements required for adjustment

1	Tripod base	2	Gray scale chart	3	Alignment tapes	4	Adjusting driver
<	<a-510 equivalent="" or=""></a-510>		<part gs2l="" no.=""></part>		(Refer to 3.2.4)		YTU93004-2
		1					

3.2.4 Alignment tape specifications

MSHP-X

Video Signal	Audio Signal	Recording Time (min.)	Applications
Color bar (1 track per frame does not contain video.)	-	50	X-value adjustment and tracking preset adjustment.

MSHV-1

Video Signal	Audio Signal	Time (min.)	Applications
Motion picture	Music sound	50	Tracking preset adjustmentPlayback switching point adjustmentRF modulator/demodulator system adjustments

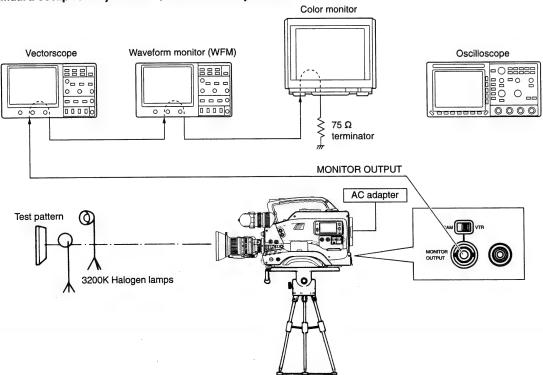
MS-1 [NTSC]

No.	Video Signal	Audio Signal	Time (min.)	Applications
1 2 3 4	Color bar Pulse & bar Multi-burst Bow-tie	1 kHz/-20dBFs	10 5 5	Video system adjustments Audio system adjustments

MS-2 [PAL]

No.	Video Signal	Audio Signal	Time (min.)	Applications
1	Motion picture	Music sound	15	a Video a vietem adjustments
2	Colour bar Pulse & bar	1 kHz/-20dBFs	10 5	Video system adjustments
4	Multi-burst	1 K112/-200B1 3	5	Audio system adjustments
5	Bow-tie		5	

3.2.5 Standard setup for adjustment (For Camera adjustment)



3.2.6 Simultaneous display in both viewfinder and monitor

If the POWER switch is turned on while the DOWN button on the right side panel is pressed together, the same display as shown in the viewfinder also appears on the monitor screen. For cancelling this condition of simultaneous display in both viewfinder and monitor, turn the POWER switch off once and again turn it on to restore the set to the normal display mode.

3.2.7 Adjustment procedure in the adjustment mode

Some of the adjustment items should be adjusted in the "adjustment mode".

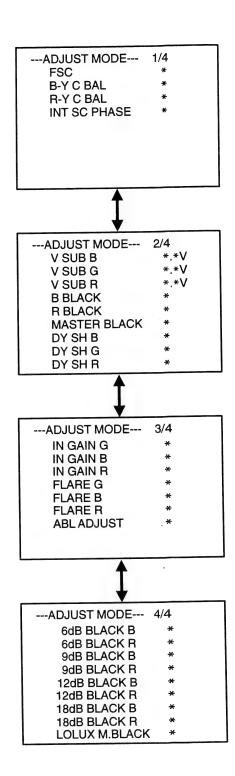
The adjustment mode allows to select an item on the monitor screen and adjust all of the required adjustments by using one potentiometer. The functions affected by each adjustment item are set automatically and the mechanical switch settings may be ignored. The adjustment procedure in the adjustment mode is described below.

- (1) Remove the right side cover. (See Section 1.3.1)
- (2) Set S1-1 on the CP board to ON to activate overlay display.
- (3) Select the adjustment item by pushing S9 and/or S10 on the CP board. (A blinking cursor is displayed on the left of selected item.)
- (4) Adjust the selected item with VR6 (ALARM control potentiometer) on the CP board. The adjusted value is displayed in the range between -128 and 127 or between -25 and 25
- (5) Setting S1-1 to OFF terminates the adjustment mode and returns the monitor to the normal screen.

When the cursor is moved to another item or S1-1 is set to OFF, the adjusted data is stored in EEPROM (IC7 on the CP board). The data is then delivered to the camera when the power is turned on.

*NOTE -

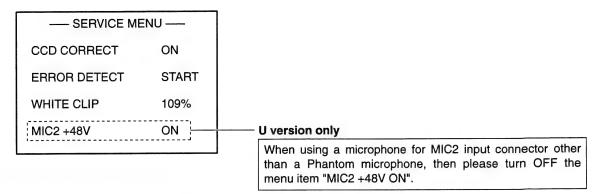
In the adjustment mode, the reference values are automatically set to necessory parameters when adjusting. Adjust items sequentially from top to bottom of the menu display.



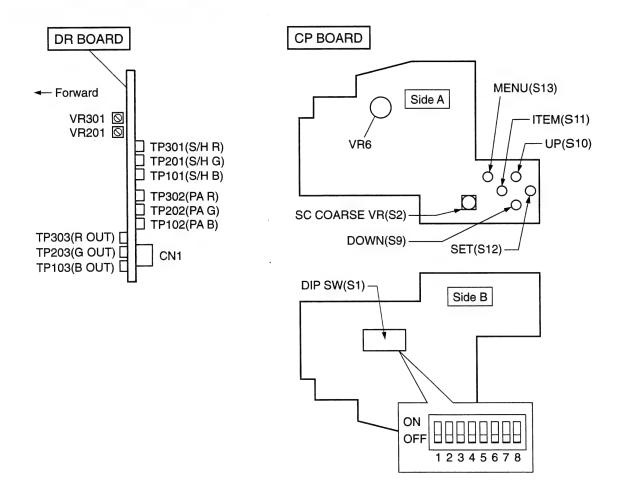
3.2.8 Service menu

Some of the adjustment items should be adjusted in the "SERV-ICE MENU".

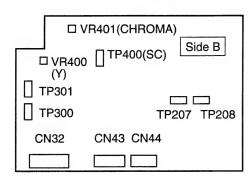
- (1) Set POWER switch to ON while pushing up the AUTOWHT. SW to initiate the SERVICE MENU.
- (2) Select the SERVICE item with ITEM button on the CP board.



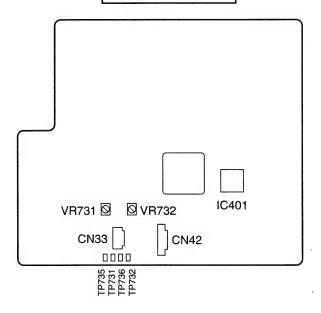
3.2.9 Potentiometers and test point layout



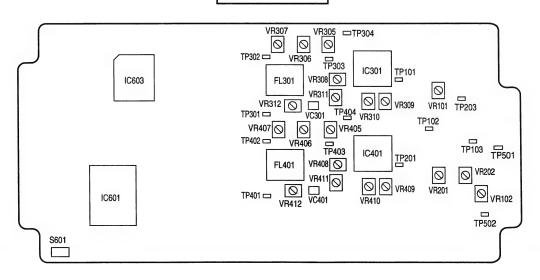
MAIN BOARD



AUDIO/LCD BOARD



SS/RFP BOARD

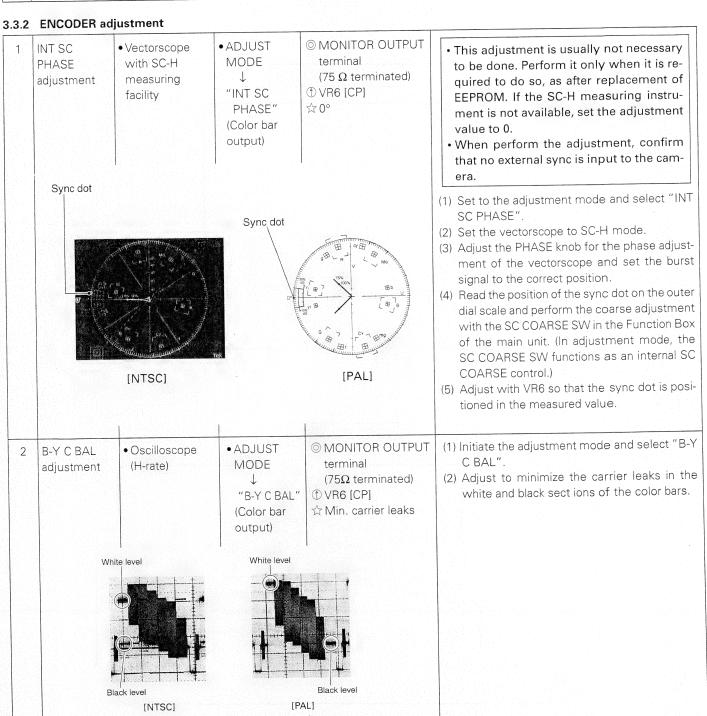


No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
		input signals		Aujustinent lever (A /	

3.3 ADJUSTMENT OF CAMERA PART

3.3.1 SSG adjustment

1 Fsc adjust- ment	• Frequency counter	◆ADJUST MODE ↓ "FSC" (Color bar output)	 ○ TP400 [MAIN] ① VR6 [CP] <ntsc></ntsc> ☆ 3,579,545±10Hz <pal></pal> ☆ 4,433,618±10Hz 	(1) Initiate the adjustment mode and selection "FSC".(2) Adjust so that the SC frequency at the measurement point becomes equal to the specified level.
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No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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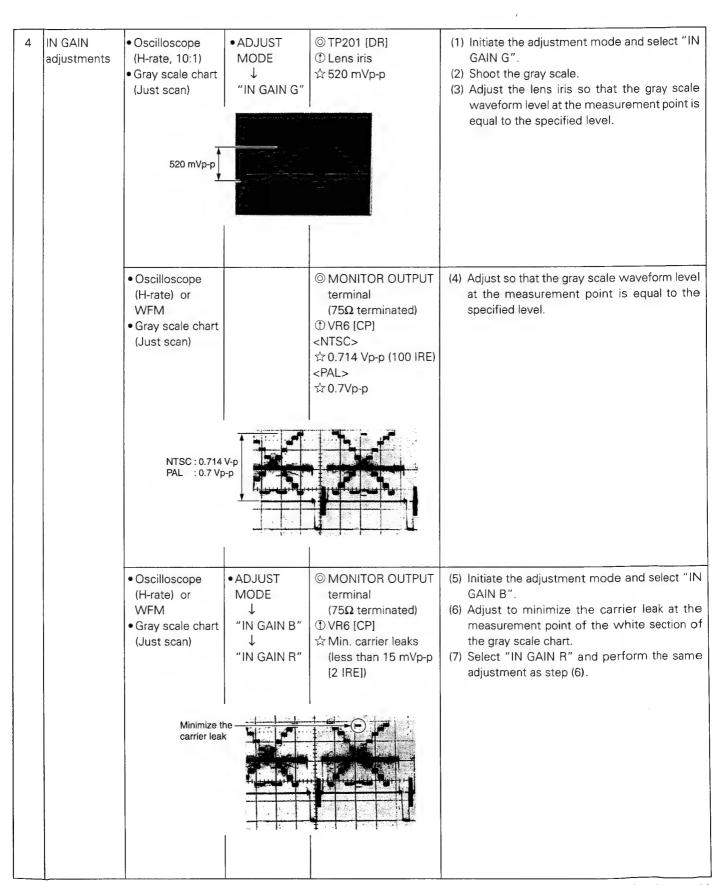
3	R-Y C BAL adjustment	Oscilloscope (H-rate)	• ADJUST MODE #R-Y C BAL" (Color bar output)	 MONITOR OUTPUT terminal (75Ω terminated) VR6 [CP] Min. carrier leaks 	(1) Initiate the adjustment mode and select "R-Y C BAL".(2) Adjust to minimize the carrier leaks in the white and black sect ions of the color bars.
4	Y LEVEL adjustment	Oscilloscope (H-rate)	• Color bar output	MONITOR OUTPUT terminal (75Ω terminated) VR400 [MAIN]	(1) Adjust so that the Y level of compsite signal at the measurement point becomes equal to the specified level.
		0.714 Vp-p		<ntsc> ☆ 0.714 Vp-p <pal> ☆ 0.7 Vp-p</pal></ntsc>	
		<u> </u>	[NTSC]		
		0.7 Vp-p	[PAL]		
5	C GAIN adjustment	Oscilloscope (H-rate)	• Color bar output	© MONITOR OUTPUT terminal (75Ω terminated) ① VR401 [MAIN] <ntsc> ☆ 0.286 Vp-p <pal> ☆ 0.3 Vp-p</pal></ntsc>	 (1) Output the color bar signal. (2) Adjust so that the output signal burst level a the measurement point becomes equal to the specified level.

No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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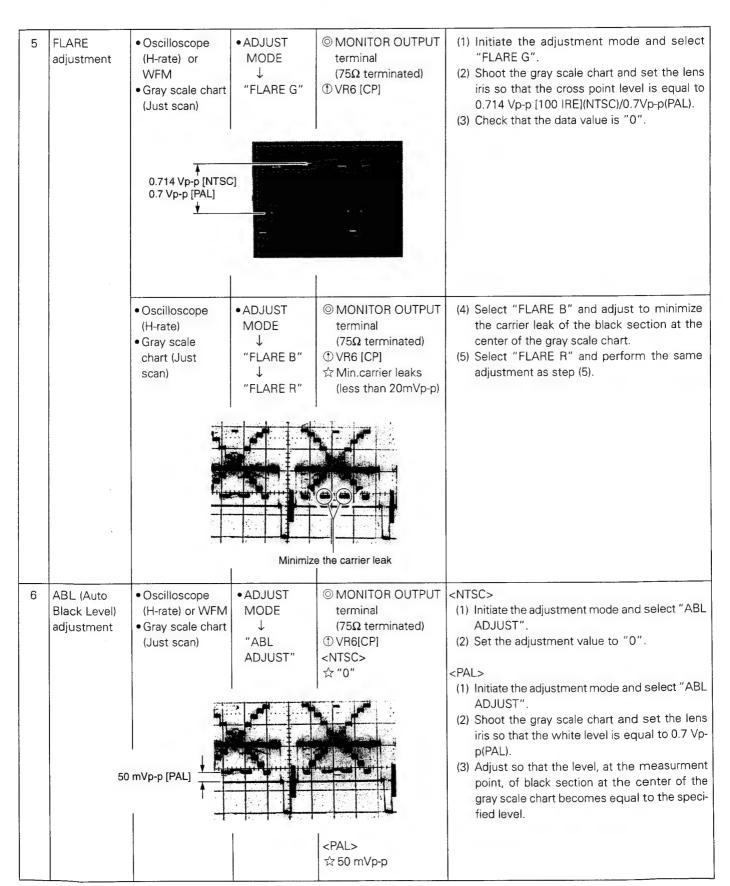
3.3.3 VIDEO PROCESS adjustment

3.3.3	VIDEO PROC	ESS adjustment			
1	B/R BLACK adjustments	Oscilloscope (H-rate) or WFM Lens cap Minimize the carrier leak	• ADJUST MODE "B BLACK" "R BLACK" (Iris closed)	⊚ MONITOR OUTPUT terminal (75Ω terminated) ⊕ VR6 [CP] ☆ Min. carrier leaks (less than 15mVp-p)	 Initiate the adjustment mode and select "B BLACK". Adjust to minimize the waveform carrier leak at the measurement point (less than 15 mVp-p). Select "R BLACK". Perform the same adjustment as step (2).
2	MASTER BLACK adjustment	Oscilloscope (H-rate) or WFM Lens cap	● ADJUSTMENT MODE ↓ "MASTER BLACK" (Iris closed)		(1) Initiate the adjustment mode and select "MASTER BLACK".(2) Adjust so that the master black level at the measurement point is equal to the specified level.
		NTSC: 0.05 Vp PAL: 0 Vp-p	-p	to the second se	
3	DYNAMIC SHADING adjustment	Oscilloscope (V-rate) or WFM Gray scale chart (Just scan)	• ADJUST MODE ↓ "DY SH G" ↓ "DY SH R"	 MONITOR OUTPUT ♥ VR6 [CP] ☆ 124 © TP203 [DR] © TP303 [DR] ● VR201 [DR] ● VR301 [DR] ☆ Flat 	 (1) Adjust the lens iris to close position. (2) Initiate the adjustment mode and select "DY SH G". Set the adjustment value to "124". (3) Select "DY SH R" and set the adjustment value to "124". (4) Adjust so that the black wave form at the measurement point is flat. (5) Shoot the gray scale chart and set the lens iris so that the white level becomes to 0.57 Vp-p (80 IRE).
			• "DY SH B"	⊕ VR6 [CP] ☆ "0"	(6) Select "DY SH B" and set the adjustmen value to "0".
			"DY SH G" "DY SH R"	© MONITOR OUTPUT ⊕ VR6 [CP] ☆ Min. carrier leaks	 (7) Select "DY SH G" and adjust to minimize the carrier leak at measurement point of the white section of gray scale chart. (8) Select "DY SH R" and perform the same operation as step (7).

No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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No. Item Measuring instruments & Mode Adjustment parts (①) Adjustment level (☆) Adjustment level (Adjustment l	djustment procedure
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No.	Item	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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7	BLACK adjustment 2	• Vectorscope • LENS cap	● ADJUST MODE ↓ "6dB BLACK B" "6dB BLACK R" ↓ "9dB BLACK B" "9dB BLACK R" ↓ "12dB BLACK B" "12dB BLACK B" "12dB BLACK B" "12dB BLACK B" "12dB BLACK R" ↓ "18dB BLACK R"	⊚ MONITOR OUTPUT terminal (75Ω termination) ① VR6 [CP] ☆ Noise dot become center	 (1) Put LENS cap or adjust the lens iris to close position. (2) Set the GAIN VR on vectorscope to maximam. (3) Initiate the adjustment mode. (4) Select "6dB BLACK B", "6dB BLACK R" and adjust so that the noise dot become center position of the vectorscope. (5) Select "9dB BLACK B", "9dB BLACK R" and perform the same operation as step (4). (6) Select "12dB BLACK B", "12dB BLACK R" and perform the same operation as step (4). (7) Select "18dB BLACK B", "18dB BLACK R" and perform the same operation as step (4).
		[NTSC]		[PAL]	
8	LOLUX BLACK adjustment		•ADJUST MODE UCLUX M. BLACK"	① VR6 [CP] ☆ –60	(1) Select "LOLUX M.BLACK". (2) Adjust so that the level at the adjustment level.
9	WHITE CLIP adjustment	• Viewfinder	•SERVICE MENU ↓ "W. CLIP"	© Viewfinder ☆ 109%	The white clip has been adjusted at 109% as initial setting. Re-adjust white clip level according to procedure, when required. (1) Set POWER SW to ON while pushing up the AUTO WHT. SW to initiate the SERVICE MENU and select "W. CLIP". (2) Set the white clip LEVEL to "109%". (3) Set AUTO WHT. SW to ON to store the "W. CLIP" data value.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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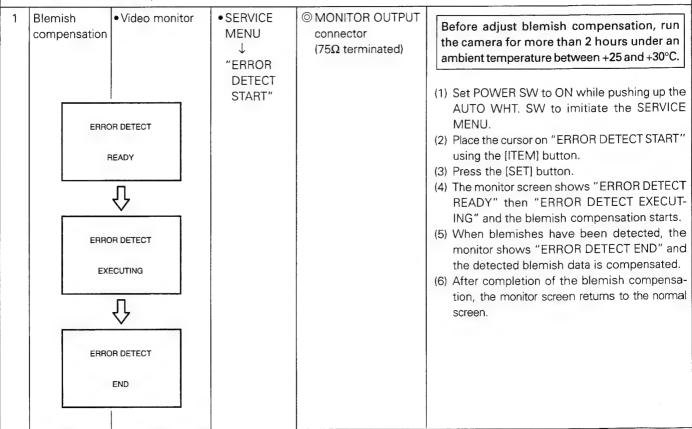
3.3.4 CCD driver adjustment

V-SUB voltage adjustments	OscilloscopeMonitor TVGray scale	• ADJUST MODE ↓ "V SUB G"	⊚ TP201 [DR] ① Lens iris ☆ 3 Vp-p and higher	(1) Adjust the lens iris so that the gray scal waveform level at the measurement point i equal to the specified level.
adjasamoma	•85 W Halogen lamp	↓ "V SUB B" "V SUB R"	© TP201 [DR] ① VR6 [CP]	(2) Set the S1-1 on the CP board "ON" to set the ADJUST MODE.(3) Adjust the white peak of the gray scale clipped to the specified level.
				 (4) Shoot an incandescent lamp at the center the monitor screen. (5) While opening the iris fully, confirm that there is smear in the picture.
				When black paper or cloth is used as background, smear is easy to see. (6) Swing the camera to the left and right (panning) and locate the position where the smear intensity maximizes. (7) Place the cursor to the "V SUB B". (8) While observing the monitor screen, adjust VR6 to minimize the smear intensity. (9) Place the cursor to the "V SUB R". (10) While observing the monitor screen, adjust VR6 to minimize the smear intensity. (11) Repeat the adjustments from step (7) to (10) two or three times. (12) Shoot an incandescent lamp at the center of the monitor screen. (13) Place the cursor to the "V SUB G". (14) While observing the monitor screen, adjust VR6 to minimize the smear intensity. (15) Set the S1-1 "OFF" and return to the norm screen.

No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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3.3.5 BLEMISH compensation

This camera incorporates a CCD blemish compensation function using an electronic memory. When the optical block assembly is replaced or in case a new blemish occurs, a renewed setting is required according to the following procedure. Note that the maximum number of compensated blemish is up to 13. (Compensated sequentially from the higher-level to the lower-lever blemishes).



3.4 ADJUSTMENT OF SERVO CIRCUIT

DIAG mode (5d:) DIAG mode (5d:) Adjust the capstan FG duty to the 50% in automaticaly. CPU measures FG level (Pin 74 of IC601 on the [SS/RFP]) just before DIAG mode (5d: tion 1.9). 3. Press the ADVANCE button to adjustment. The counter displays "5d:P the automatic adjustment. 4. Check that the counter display Normal end: "5d:Ed.□□□□". Abnormal end: "5d:Ed.□□□□".
the capstan motor is stopped.

No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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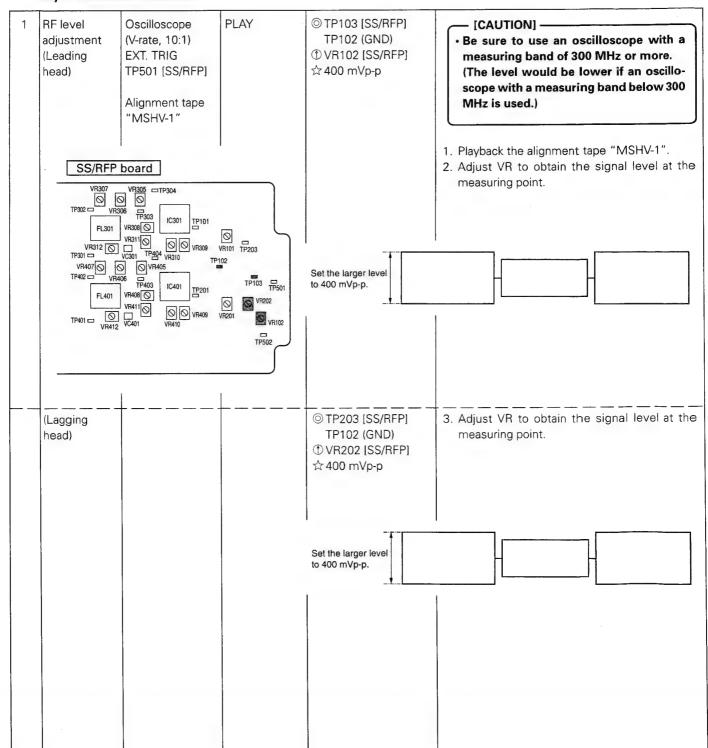
2	Tracking preset adjustment	X value alignment tape "MSHP-X"	PLAY mode, DIAG mode (58:)	Automatic adjustment ☆ RF ENV (IC601 80 pin [SS/RFP]) envelope should be maximized as a result of the auto- matic adjustment.	Proceed to the following adjustment after having completed the X-value adjustment. 1. Set DIAG mode "58:" (see the subsection "1.9"). 2. Load and playback X value alignment tape "MSHP-X". 3. Press the SELECT button to start automatic adjustment. The counter displays "58:p" during the automatic adjustment. 4. Check that the counter displays "58:60:00 00". [CAUTION] If the automatic adjustment fails, data is not written and the counter display shows "58:60:00 00". In this case, perform the adjustment again. If the PRESET button is pressed or another mode than PLAY is entered during adjustment, the counter display shows "58:85-00 00". 5. Eject the X value alignment tape. 6. Perform subsection "3.4.3 Playback switching point adjustment".
3	Playback switching point adjustment	Alignment tape "MSHV-1"	PLAY mode DIAG mode (E4:)	Automatic adjustment ☆ The leading edge of the HID signal should be as shown in the diagram below in automatically	CAUTION Proceed to the following this adjustment after having completed the sub section "2.10.5 X-value adjustment". 1. Set DIAG mode " & " (see the subsection 1.9). 2. Load and playback alignment tape "MSHV-1". 3. Press the SELECT button to start automatic adjustment. The counter displays " & +: P " during the automatic adjustment. 4. Check that the counter displays " & +: Ed DD DD ".
		[SS/F	TP501)	310µs	• If the automatic adjustment fails, data is not written and the counter display shows "54:57.00 00 ". In this case, perform the adjustment again. • If the PRESET button is pressed or another mode than PLAY is entered during adjustment, the counter display shows "54:85.00 00 ". 5. Eject the alignment tape. 6. Press the MENU button to quit the DIAG mode.

No. Item Measuring instruments & Mode Input signals Mode Adjustment level (☆) Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)
--

3.5 ADJUSTMENT OF RF MODULATOR/DEMODULATOR CIRCUIT

[CAUTION]

- Switch auto tracking OFF. (DIAG menu " Ӌ:飛는 ೬৮ ")
- Before proceeding to the following adjustments, playback the alignment tape "MSHV-1" and adjust the TRACKING potentiometer (on the MT board) so that the amplitude of the RF waveform at TP203 on the SS/RFP board is maximized.
- The VR311 and the VR411 on the SS/RFP cannot be used for adjustments with the NTSC model. Make sure to turn it fully in a clockwise direction.



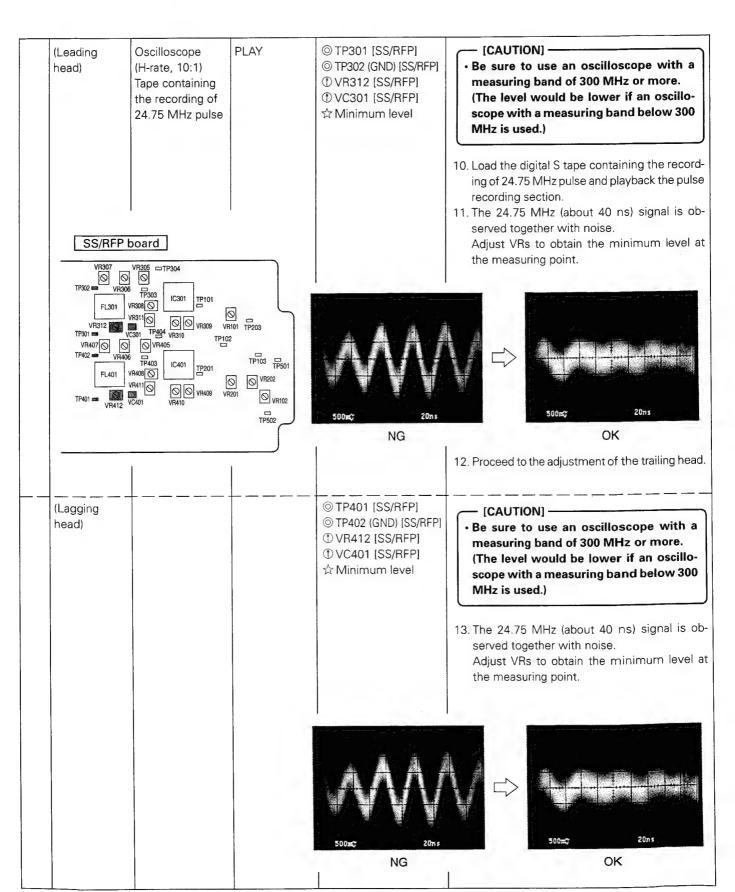
No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
-----	------	---	------	---	----------------------

2	EQ level adjustment (Leading head)	Oscilloscope (V-rate, 10:1) EXT. TRIG TP501 Alignment tape	PLAY	© TP101 [SS/RFP] © GND : TP102 ① VR101 [SS/RFP] ☆ 150 mVp-p	• Be sure to use an oscilloscope with a measuring band of 300 MHz or more. (The level would be lower if an oscilloscope with a measuring band below 300 MHz is used.)
	FL301 VR312 TP301 □	"MSHV-1" board	VR101 TP203 1102 TP103 TP501 VR202 VR201 VR202 VR201		1. Playback alignment tape "MSHV-1". 2. Adjust VR to obtain the signal level at the measuring point.
_	(Lagging head)			© TP201 [SS/RFP] © GND : TP102 ① VR201 [SS/RFP] ☆ 150 mVp-p	3. Adjust VR to obtain the signal level at the measuring point.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
-----	------	---------------------------------------	------	---	----------------------

3 [1+D] adjustment	• This adjustment requires the use of BR-D92, BR-D80 or BR-D85 (Digitals VCR) or a spectrum analyzer. Therefore, the adjustment procedure in the case of the BR-D92, BR-D80 or BR-D85 is as described in subsection 3A and in the case when a spectrum analyzer is used as described in subsection 3B. Select either subsection according to the available instruments.					
3A When the BR- D92/BR-D80/ BR-D85 is used (Prepara- tion)	BR-D92/ BR-D80/ BR-D85 mode	• Create a tape on which a 24.75 MHz pulse is recorded by using the following method.				
	Menu switch "No. 111", internal color bar	 Press the MENU button of the BR-D80 or BR-D85 to select "No. 111", then select "INTER-NAL COLOR BAR" and press the SET button For BR-D92, select the internal signal generator by Input video signal button on the from panel. Turn power OFF then turn power ON again in the test mode. 				
	Test mode (<i>&F 00 00</i>)	Note A) Turn the power switch to on. B) Press the "COUNTER RESET", "FF" and "REW" buttons at the same time within 2 second after counter display "00 00 00 00 00" is appeared.				
	REC mode	 Press the MENU or SET button so that the counter displays "EF OOO". Press the COUNTER RESET button and check that the counter displays "EF P OOO". Load a digital S tape. Press the REC and PLAY buttons to start recording. After recording for a few minutes, press the STOP button. Press the COUNTER RESET button and check that the counter displays "EF End". 				
		9. Eject the digital S tape. This tape contains the recording of the 24.7 MHz pulse.				

No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (①) Adjustment level (☆)	Adjustment procedure

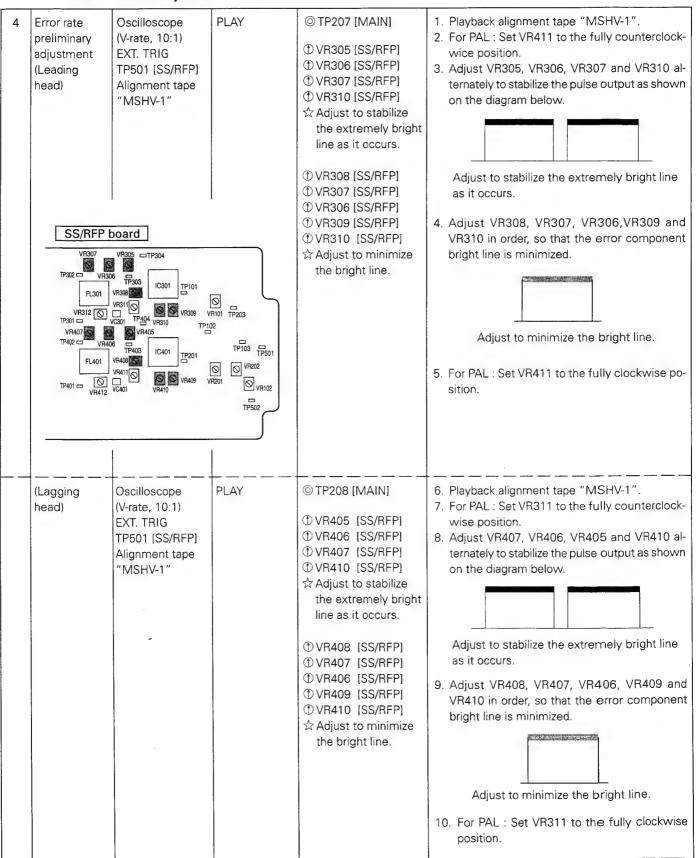


No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⑪) Adjustment level (☆)	Adjustment procedure
3B	VR407 VR407 VR40	VR305 TP304 VR306 TP303 IC301 TP101 VR308	PLAY PLAY	© TP301 [SS/RFP] © TP302 (GND) [SS/RFP] ① VC301 [SS/RFP] Minimum level is 24.75 MHz. © TP301 [SS/RFP] © TP302 (GND) [SS/RFP] ① VR312 [SS/RFP] ☆ Adjust so that the 24.75 MHz level is -30 dB or lower compared to the 15 MHz level.	 Load and playback alignment tape "MSHV-1" Adjust VR to obtain the signal level at the measuring point. Adjust VRs to obtain the signal level at the measuring point. Repeat steps 2 and 3 above for a few times MHz 24.75 MHz Proceed to the adjustment of lagging head.
	(Lagging head)			© TP401 [SS/RFP] © TP402 (GND) [SS/RFP] ♣ Minimum level is 24.75 MHz. © TP401 [SS/RFP] © TP402 (GND) [SS/RFP] ♣ Adjust so that the 24.75 MHz level is -30 dB or lower compared to the 15 MHz level.	 6. Adjust VR to obtain the signal level at the measuring point. 7. Adjust VRs to obtain the signal level at the measuring point. 8. Repeat steps 2 and 3 above for a few times 30 dB or more 15 MHz 24.75 MHz

No. Item Measuring instruments & Mode Input signals Mode Adjustment level (☆)

Measuring point (⑤) Adjustment parts (①) Adjustment procedure

[CAUTION] The VR311 and the VR411 on the SS/RFP board cannot be used for adjustments with the NTSC model. Make sure to turn it fully in a clockwise direction.



No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⑤) Adjustment parts (①) Adjustment level (☆)	Adjustment procedure
5	VCO preliminary adjustment (Leading head)	Digital voltmeter Oscilloscope (V-rate, 10:1) EXT TRIG TP501 Alignment tape "MSHV-1"	PLAY	© TP303 [SS/RFP] TP304 (GND) ① VR305 [SS/RFP] ☆ ((a+b)/2 – 0.05) V ± 0.01 V	 Playback alignment tape "MSHV-1". Connect the digital voltmeter to TP303 and the oscilloscope to TP300 [MAIN]. Set VR305 to the fully counterclockwise position, then rotate it slowly clockwise while observing the picture on the monitor. When the observed signal is locked as shown in the diagram, measure the voltage at TP303 using the digital voltmeter. Assume that this voltage is "a". Set VR305 to the fully clockwise position.
) (Leading head) I (Lagging head)	→
				Freeze	Immediately Locked before locking
	VR307 VR307 VR307 VR312 VR312 VR407 VR407 VR407 TP401 TP401 VR412	VR305 ****TP304 06 **TP303 IC301 TP101 VR308	P101 TP203 2 TP103 TP501 VR202 1201 VR102 TP502		 Press the "STOP" button, and then playback the alignment tape. Rotate VR305 slowly counterclockwise from the fully clockwise position while observing the oscilloscope waveform. When the observed signal is locked as shown in the diagram, measure the voltage at TP303 using the digital voltmeter. Assume that this voltage is "b". Substitute measured voltages "a" and "b" in the following equation. X = (a+b/2 - 0.05) Adjust VR305 so that the voltage at TP331 is equal to the value of "x" in the above equation.
	(Lagging head)			© TP403 [SS/RFP] TP404 (GND) ① VR405 [SS/RFP] ☆ ((a+b)/2 – 0.05) V ± 0.01 V	9. Connect the digital voltmeter to TP403 and the oscilloscope to TP301 [MAIN]. 10. Adjust VR so that the same adjustment of leading head.

[CAUTION] Before proceeding to Section 3.5.6, "Recording current adjustment" and Section 3.5.7, "Error rate adjustment", complete 2.4.3, "Switching point adjustment" and switch auto tracking ON.

6	Recording current adjustment	Digital S tape	STOP mode DIAG mode (기급:)	Automatic adjustment								

- The automatic adjustment is executed in the following sequence.
- A) It so recorded the signal 4 times that recording current shifted 8 steps (the total required time is about 2 minutes). During this the display shows

- B) Tape is rewound to the recording start point in REV search mode. The display shows "72:P .2000" during this.
- C) The VCR enters PLAY mode and detects the playback level of the recorded section. Then the optimum playback level of each head (CH1 leading, CH2 trailing) is identified and the recording currents are determined based on this analysis (the required time is about 2 minutes). During this operation, the display shows

data 1: The head being detected (1 to 4). data 2: Hex data between 00H and FFH. When the playback levels of all the steps have been detected and the optimum values are identified, the displayed data changes.

D) When the optimum values of all the heads have been identified, the VCR enters STOP mode and automatic adjustment is completed.

- 1. Set DIAG mode " 72: .-- -- " (see the subsection 1.9).
- 2. Load a digital S tape and put the VCR in stop mode
- 3. Press the SELECT button to start automatic adjustment.
- 4. Automatic adjustment starts when "P ** **" is displayed.

Normal end : " $\mathcal{E}_{\mathcal{C}}$ " is displayed on the LCD.

Abnormal end: " E_{Γ} ** " is displayed. In this case a re-adjustment is automatically executed.

- 5. Quit the DIAG mode.
- Proceed to sub section "3.5.7 Error rate adjustment".

- [CAUTION] -

Counter display " ??: ¿r . [] [] [] " appears for one of the following reasons;

- a) the PRESET button is pressed during operation; or
- b) the VCR mode is changed; or
- c) the tape end is detected; or
- d) the adjustment is defective.

If the reason is a) or b), restart adjustment from the beginning. If the reason is c), rewind tape and restart adjustment. If the reason is d), perform the adjustments in subsection "3.5.1" to "3.5.5" again.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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[CAUTION] Before proceeding to subsection "3.5.7 Error rate adjustment", complete "3.4.3 Playback switching point adjustment" and switch auto tracking ON.

Error rate adjustmer (Preparation		REC		Load a digital S tape. A self-recording tape is made by shooting moving images for a few minutes.
VF302 CD CD CD VF302 CD	Oscilloscope (V-rate, 10:1) EXT. TRIG. TP501 Frequency counter RFP board 307 VR305 TP304 VR306 TP303 IC301 TP101 VR311 VR308 VR306 TP303 IC301 TP101 VR311 VR308 VR306 TP303 IC301 TP201 VR306 TP303 VR309 VR306 TP403 VR309	PLAY PLAY WR101 TP203 TP102 TP102 VR202 VR201 VR202 VR201 VR202	© TP300 [MAIN] ① VR308 [SS/RFP] ① VR307 [SS/RFP] ① VR306 [SS/RFP] ☆ Minimized pulse count in osciloscope display Minimize the frequency counter	 PAL set VR411 to the fully counterclockwise position (for E-Ver.). Playback the digital S tape which was recorded in the preparation stage. Connect the oscilloscope and frequency counter to TP300. While observing the oscilloscope and frequency counter, adjust VR308 to minimize the frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency count.) While observing the oscilloscope and frequency counter, adjust VR307 to minimize the frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency count.) While observing the oscilloscope and frequency counter, adjust VR306 to minimize the frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency count.) While observing the oscilloscope and frequency counter, adjust VR309 to minimize the frequency counter, adjust VR309 to minimize the frequency. (Adjust VR to obtain the specified pulses)
		REV. SEARCH	 ◆ VR310 [SS/RFP] ☆ Minimize the frequency counter display ◆ VR307 [SS/RFP] ◆ VR306 [SS/RFP] ☆ Minimize the frequency counter display (no more than 3 kHz for Uver.). (No more than 1.5 kHz for E-ver.) 	minimum count of pulse and smallest frequency count.) 8. Initiate REV search mode. 9. While observing the frequency counter, adjust VR310 to minimize the frequency. 10. Initiate play mode. 11. While observing the oscilloscope and frequency counter, adjust VR307 and VR30 alternately to minimize the frequency count (Adjust VR to obtain the specified minimum count of pulse and smallest frequency count 12. Proceed to the adjustment of the laggin head. 13. PAL set VR411 to the fully clockwise position.

No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
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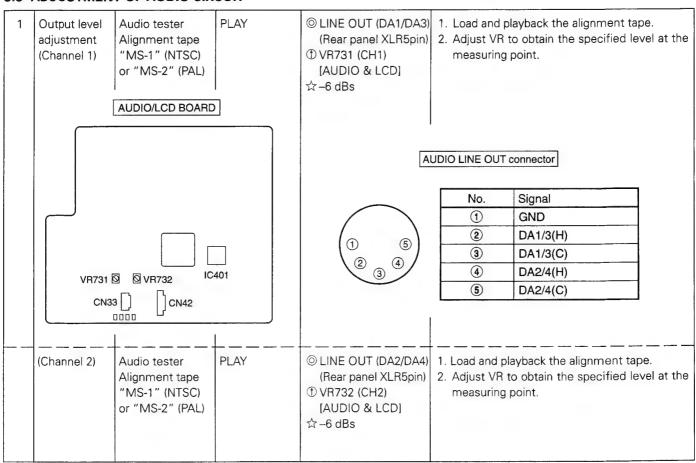
	VR407 VR402 □ VR401	VR315 DTP304 VR306 TP303 IC301 TP101 VR308 N N N N N N N N N N N N N N N N N N N	PLAY PLAY PLAY PLAY PLAY	© TP301 [MAIN] ① VR408 [SS/RFP] ① VR406 [SS/RFP] ① VR409 [SS/RFP] ☆ Minimum pulse count in osciloscope Minimize the frequency counter display ① VR407 [SS/RFP] ☆ Minimize the frequency counter display ① VR406 [SS/RFP] ☆ Minimize the frequency counter display (no more than 3 kHz for U-ver.). (No more than 1.5 kHz for E-ver.)	 For PAL: Set VR311 to the fully counterclockwise position (for E-Ver.). Playback the digital S tape which was recorded in the preparation stage. Connect the oscilloscope and frequency counter to TP301. While observing the oscilloscope and frequency counter, adjust VR408 to minimize the frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency counter, adjust VR407 to minimize the frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency count.) While observing the oscilloscope and frequency counter, adjust VR406 to minimize the frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency count.) While observing the oscilloscope and frequency counter, adjust VR409 to minimize the frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency counter, adjust VR409 to minimize the frequency count.) Initiate REV search mode. While observing the frequency counter, adjust VR410 to minimize the frequency. Initiate play mode. While observing the oscilloscope and frequency counter, adjust VR407 and VR406 alternately to minimize the frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency. (Adjust VR to obtain the specified minimum count of pulse and smallest frequency count.) For PAL: Set VR311 to fully clockwise position.
8	VCO adjustment				Adjust the same adjustment "3.5.5 VCO preliminary adjustment (Leading head/Lagging head)". • For the adjustment, make sure to playback the digital S tape which was recorded during the preparation stage.

check (Leading head) Frequency counter SS/RFP board CDS104) Frequency (Leading head) Frequency counter SNo more than 3 kHz for U-ver. No more than 1.5 kHz for E-ver. ⊕ VR306 [SS/RFP] VR307 [SS/RFP] SS/RFP board SS/RFP board SS/RFP board CDS104) Frequency counter to the adjustment of the frequency counter to the adjustment of the frequency counter rate. Set VR411 to the fully counterclock wise position (for E-Ver.). 4. The error rate check result is OK if the frequency counter reading is no more than 3 kHz for U-Ver.) 1.5 kHz (for E-Ver.) and almost equency counter reading is no more than 3 kHz for U-Ver.) 1.5 kHz (for E-Ver.) and almost equency counter reading is no more than 3 kHz for U-Ver.) 1.5 kHz (for E-Ver.) and almost equency counter reading is no more than 3 kHz for U-Ver. No more than 2. Set VR411 to the fully counterclock wise position (for E-Ver.) and almost equency counter reading is no more than 3 kHz for U-Ver. No more than	No. Item	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
increased (i.e. the reading is larger by 10% of more than the frequency value set by the expression of the property of the pro	9 Error rate check (Leading head) SS/RFF VR307 TP302 VR VR307 VR407	instruments & Input signals Digital S tape (DS104) Frequency counter P board VR305 □ TP304 VR305 □ TP404 VR310 VR311 □ □ □ VR309 VR305 □ TP404 VR310 VR305 □ TP404 VR310 VR305 □ TP404 VR310	PLAY PLAY	Adjustment parts (⊕) Adjustment level (☆) © TP300 [MAIN] ☆ No more than 3 kHz for U-ver. No more than 1.5 kHz for E-ver. ⊕ VR306 [SS/RFP]	 Playback the digital S tape which was recorder in the preparation stage. Connect the frequency counter to the adjust ment point and check the error rate. For PAL: Set VR411 to the fully counterclock wise position (for E-Ver.). The error rate check result is OK if the frequency counter reading is no more than 3 kH (for U-Ver.) 1.5 kHz (for E-Ver.) and almost equato the value set by the prevously-made error rate adjustment. (See subsection 3.6.7)

VR307 TP302	VR311	1.5 kHz for E-ver. ① VR306 [SS/RFP] ① VR307 [SS/RFP] VR307 [SS/RFP] VR308 [Pios Pios P	wise position (for E-Ver.). 4. The error rate check result is OK if the frequency counter reading is no more than 3 kHz (for U-Ver.) 1.5 kHz (for E-Ver.) and almost equal to the value set by the prevously-made error rate adjustment. (See subsection 3.6.7) After PLL lock adjustment, if the error rate has increased (i.e. the reading is larger by 10% or more than the frequency value set by the error rate adjustment), adjust VR306, VR307 again and proceed to subsection "3.5.5 VCO adjustment".
(Lagging head)	Digital S tape (DS104) Frequency counter	© TP301 [MAIN] ☆ No more than 3 kHz for U-ver. No more than 1.5 kHz for E-ver. ① VR406 [SS/RFP] ① VR407 [SS/RFP]	 Playback the digital S tape which was recorded in the preparation stage. Connect the frequency counter to the adjustment point and check the error rate. For PAL: Set VR311 to the fully counterclockwise position (for E-Ver.) The error rate check result is OK if the frequency counter reading is no more than 3 kHz (for U-Ver) 1.5 kHz (for E-Ver.) and almost equal to the value set by the prevously-made error rate adjustment. If the error rate has increased (i.e. the reading is larger by 10% or more than the frequency value set by the error rate adjustment), adjust VR406, VR407 again and proceed to subsection "3.5.5 VCO adjustment". For E-ver.: set VR411 to the fully clockwise position.

No.	ltem	Measuring instruments & Input signals	Mode	Measuring point (⊚) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
-----	------	---	------	---	----------------------

3.6 ADJUSTMENT OF AUDIO CIRCUIT



3.7 ADJUSTMENT OF S/S CIRCUIT

1	Remaining	+12 V ± 0.05 V	REC,	Automatic	1. Input +12 V +/-0.05 V (4 A or more) to the DC
	battery detection	DC INPUT	DIAG mode	adjustment	INPUT connector. 2. Set the VCR to the REC mode.
	circuit adjustment	DC INPOT	(86:)		3. Set DIAG mode "##: " (see the subsection "1.9").
	(automatic adjustment)				 Press the select button to start automatic adjustment.
					5. " 85 Ed 00 xx" is displayed on the LCD counter display when the automatic adjustmented and sometimes and sometimes.
					6. Turn power OFF to quit the DIAG mode.

SECTION 4 CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Schematic safety precaution

 ⚠ Parts are safety related parts.

When replacing them, be sure to use the specified parts.

· Voltage and waveform measurements

Voltage: Measured with digital voltmeter in DC range;

iris closed in REC mode.

Value in () is indicated only in the case PB voltage is different from that in REC mode.

Waveform: Gray scale illuminated at more than 4000 lux at 3200K lighting.

· Unit of value

Unless otherwise specified

- 1) Resistance is in Ω (1/6 W)
- 2) Capacitance is in μF
- Inductance is in μH

· Expression of wiring

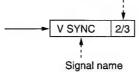
As the following circuit diagram is divided to print on some sheets, such an indication as the following is found in the case the wiring extends over two or more divided sections.

1) Circuit diagram divided into two or more sections:

Board	Board Name	Number of divided sections
06 07 08 09	MAIN SS/RFP AUDIO & LCD PR OVERALL	1/10 - 10/10 1/6 - 6/6 1/5 - 5/5 1/4 - 4/4 1/6 - 6/6

Indication of wiring which extends to another section: (Example)

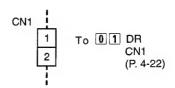
This indication that wiring extends to "2/3" of the diagram.



In the above case, the end of the wiring is connected to the "V SYNC" on the 2nd section of the diagram.

· Wiring of connector

(Example)



In the above example, CN1 is connected with CN1 on **1** DR board.

· Signal flow on the diagram

The following allow marks indicate the specified signal paths respectively.

: Recording or EE signal path

: Recording and Playback signal path

· Others

In regard of a board assembly whose circuit is composed of multilayered board patterns such 4- or 6-layered patterns, board patterns of the power supply lines and grounding lines are omitted in this section.

Note: For detail of each electrical part, refer to Section 6 "ELECTRICAL PARTS LIST" by it symbol number.

■ REPLACING SURFACE MOUNT "CHIP" COMPONENTS

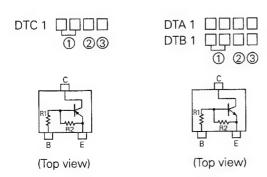
- Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
- Chip resistors used in some circuits are of high precision type having little error in resistance.

To demonstrate the full capacity of this set, place an order for proper parts referring to the diagrams and parts lists in the section 5.

- · Soldering cautions:
 - 1) Do not apply heat for more than 3 seconds.
 - 2) Avoid using a rubbing stroke when soldering.
 - 3) Discard removed chips; do not reuse them.
 - 4) Supplementary cementing is not required.
 - 5) Use care not to scratch or otherwise damage the chips.

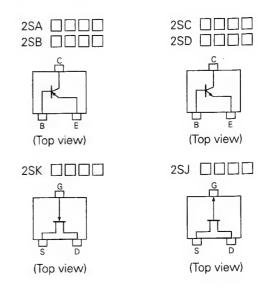
■ CHIP PARTS PIN ARRANGEMENT

[1] Digital transistors

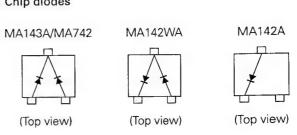


- 1) Two digits show resistance of R1 in abbreviation.
 - 43 : 4.7 kΩ 14 : 10 kΩ 24 : 22 kΩ 44 : 47 kΩ
- (2) Roman letter show the resistive ratio between R1 and R2 in abbreviation.
 - E: R2/R1 = 1/1 Y: R2/R1 = 5/1 W: R2/R1 = 2/1 X: R2/R1 = 1/2 T: R2 is opened.
- 3 Symbol the shape of resistor in abbreviation.

[2] Chip transistors and chip F.E.T.s

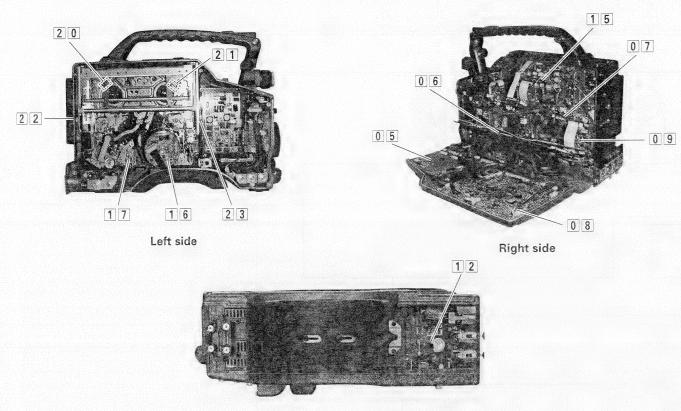


[3] Chip diodes



4.1 INDEX TO PAGES OF MAIN BOARDS AND CIRCUIT BOARD LOCATION

4.1.1 Circuit board location

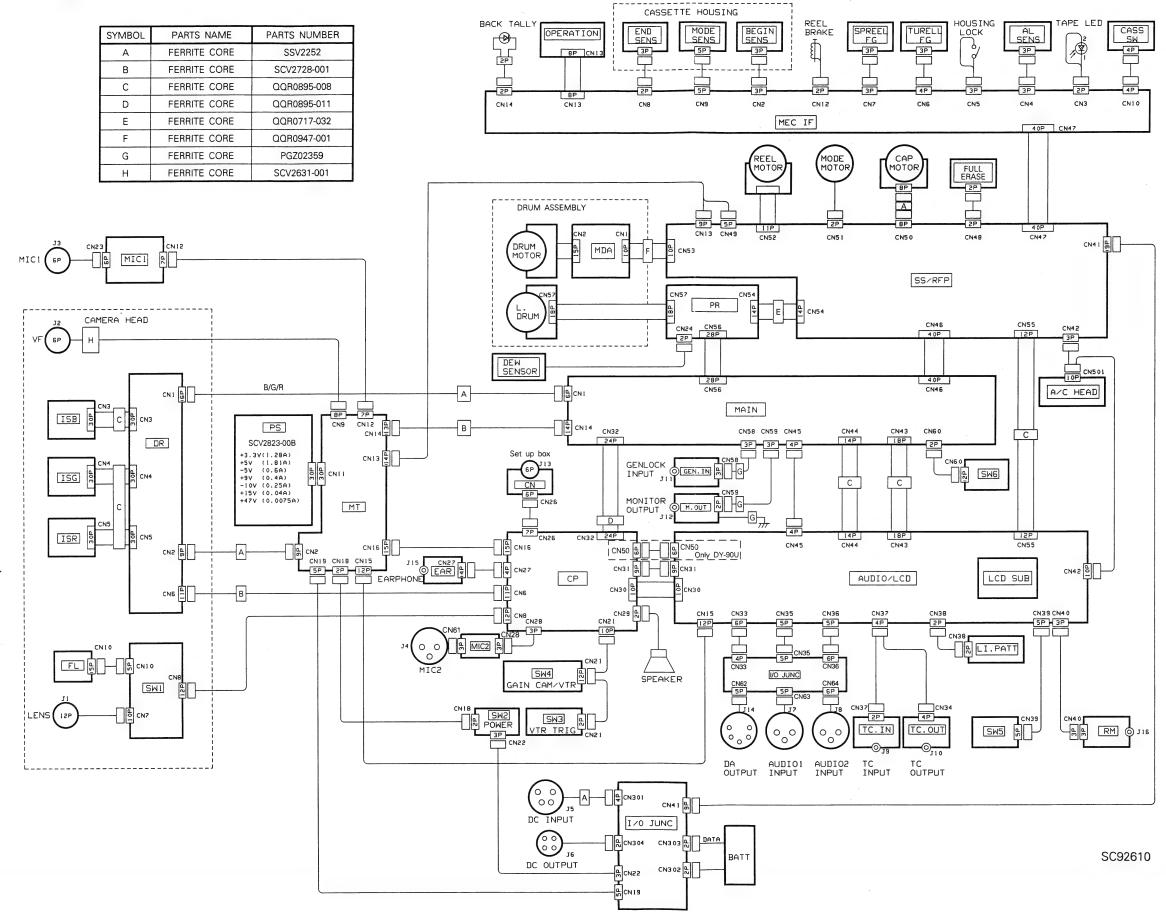


Bottom side (connector box)

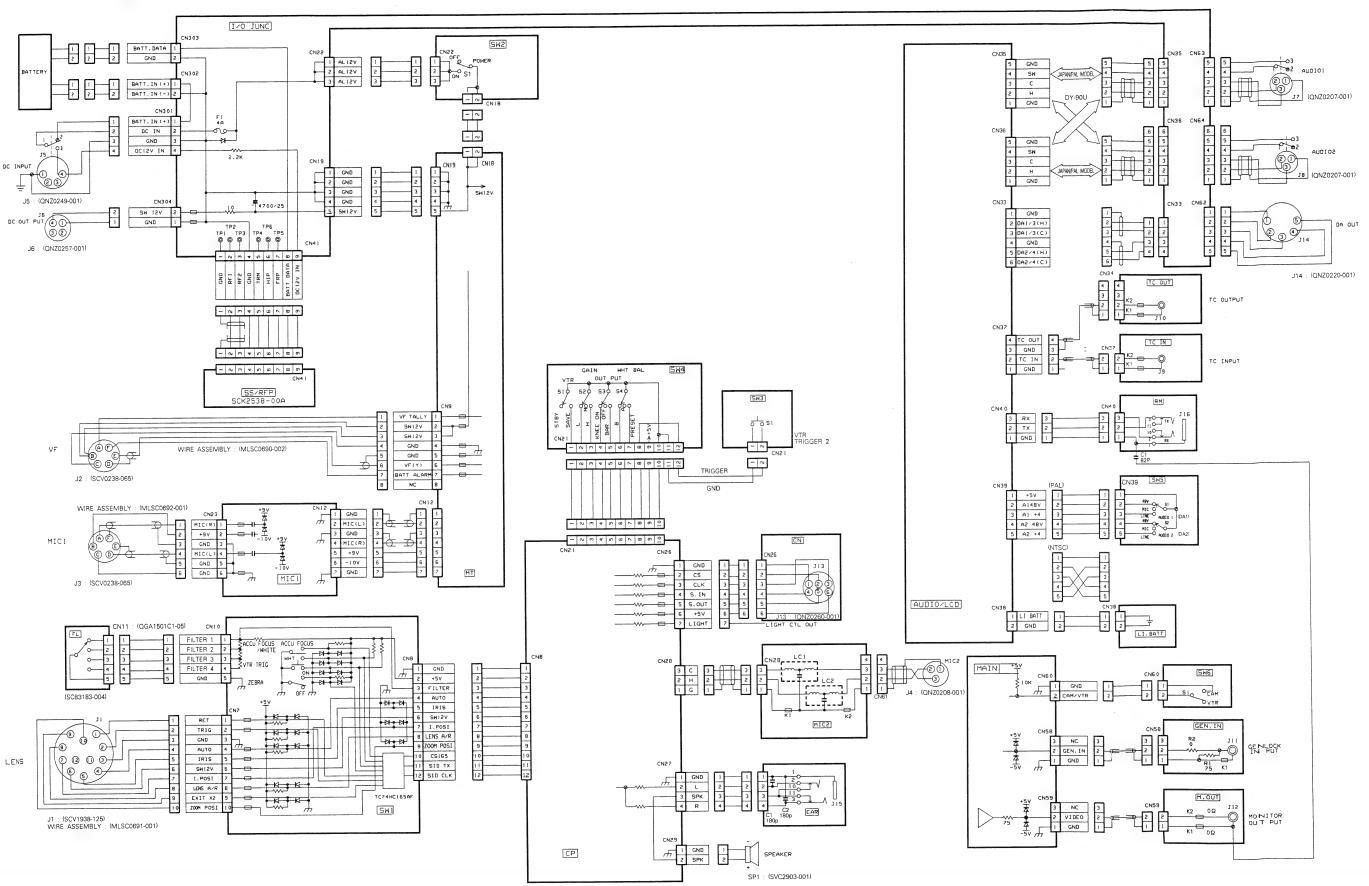
Board	David Name	Page of diagram			Board	Board Name		Page of diagram	
No.	Board Name	Block diagram	Schematic diagram	Circuit board	No.	Board Name	Block diagram	Schematic diagram	Circuit board
01	DR	4-11	4-22	4-23	3 1	TC. OUT		4-5	4-72
02.	03,04 ISB, ISG, ISR	4-11	4-24	4-25	3 2	EAR		4-5	4-72
05	CP	4-12	4-26, 4-28	4-27, 4-29	3 3	LI. BATT	4-19	4-5	4-71
0.6	MAIN	4-13 to 4-15	4-30 to 4-39	4-30 to 4-43	3 5	GEN. IN		4-5	4-72
07	SS/RFP	4-16, 4-17	4-44 to 4-49	4-50 to 4-53	[3] [6]	MON. OUT		4-5	4-72
0.8	AUDIO & LCD	4-18, 4-19	4-54 to 4-60	4-61, 4-62	3 7	RM		4-5	4-72
0 9	PR	4-20	4-63 to 4-66	4-67	3 8	CN		4-70	4-71
10	MT		4-68	4-69	41	MIC 2		4-70	4-71
11	LCD SUB	4-19	4-68	4-69	3 9	PS		4-74	
12	I/O JUNC	6	4-72	4-72	40	MEMORY		4-70	4-71
13	MIC 1		4-70	4-71		OVERALL		4-4 to 4-9	
14	OPERATION		4-70	4-71					
15	MEC I/F		4-6	4-71					
16	MDA		4-73	4-73					
17	A/C HEAD	4-18	4-9	4-73					
18	MODE SENSE		4-6	4-73					
19	AL SENSE		4-6	4-73					
20	TU SENSE		4-6	4-73	11				
21	SP SENSE		4-6	4-73	11				
22	BEGIN SENSE		4-6	4-73	11				
23	END SENSE		4-6	4-73	11				
24	SW 1		4-70	4-71					
25	SW 2		4-5	4-72					
26	SW 3		4-5	4-72					
27	SW 4		4-70	4-71					
28	SW 5		4-5	4-72					
29	SW 6		4-5	4-72					
30	TC, IN		4-5	4-72					

4.2 OVERALL WIRING DIAGRAM

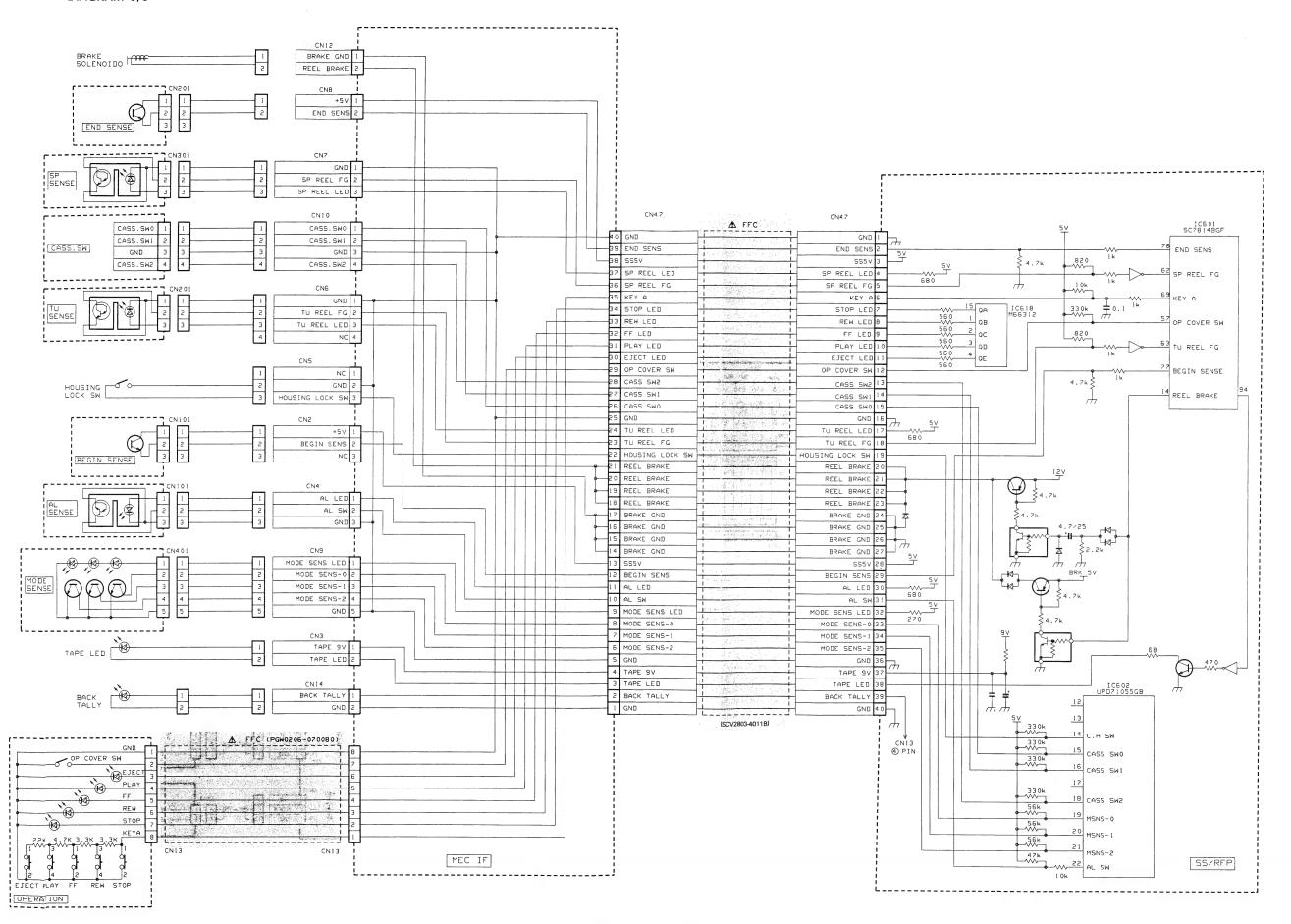
- DIAGRAM 1/6 -

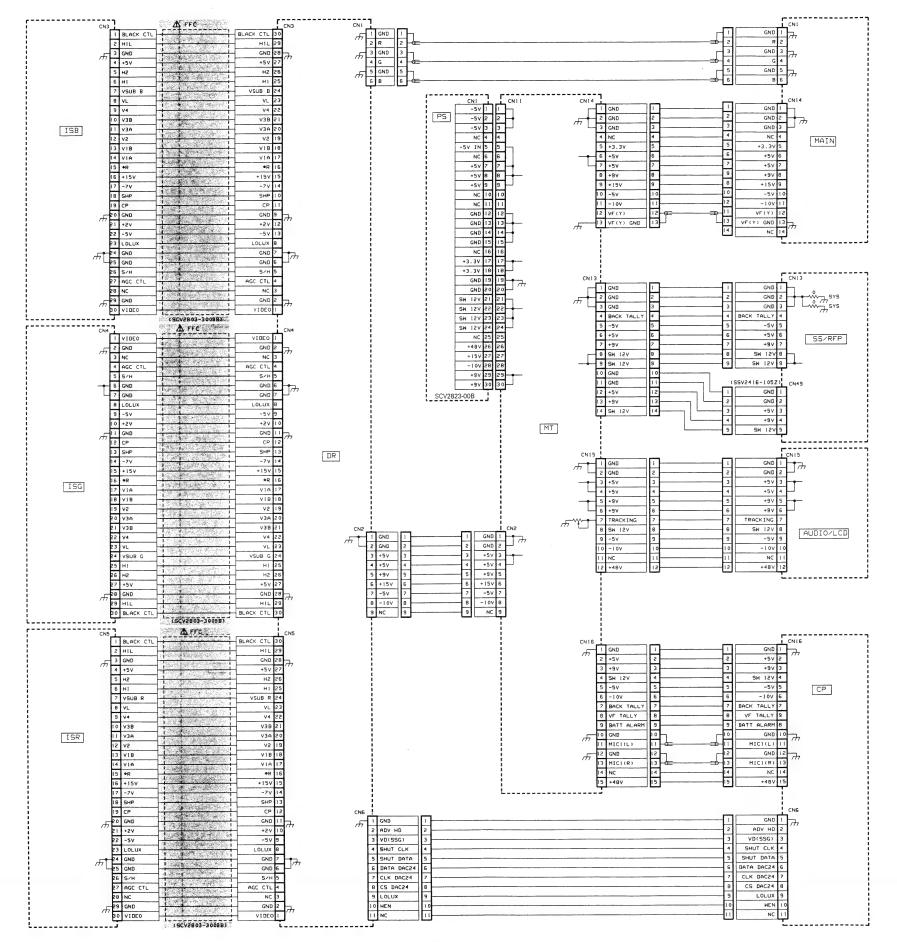


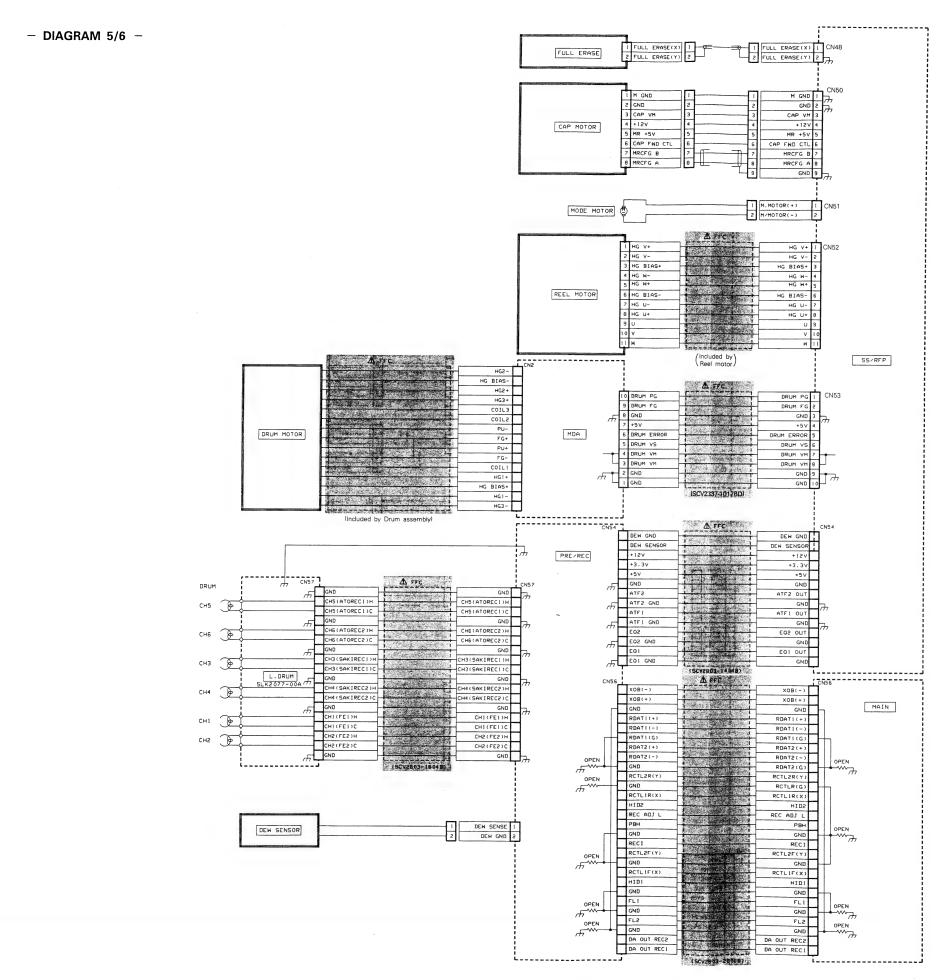
- DIAGRAM 2/6 -



- DIAGRAM 3/6 -



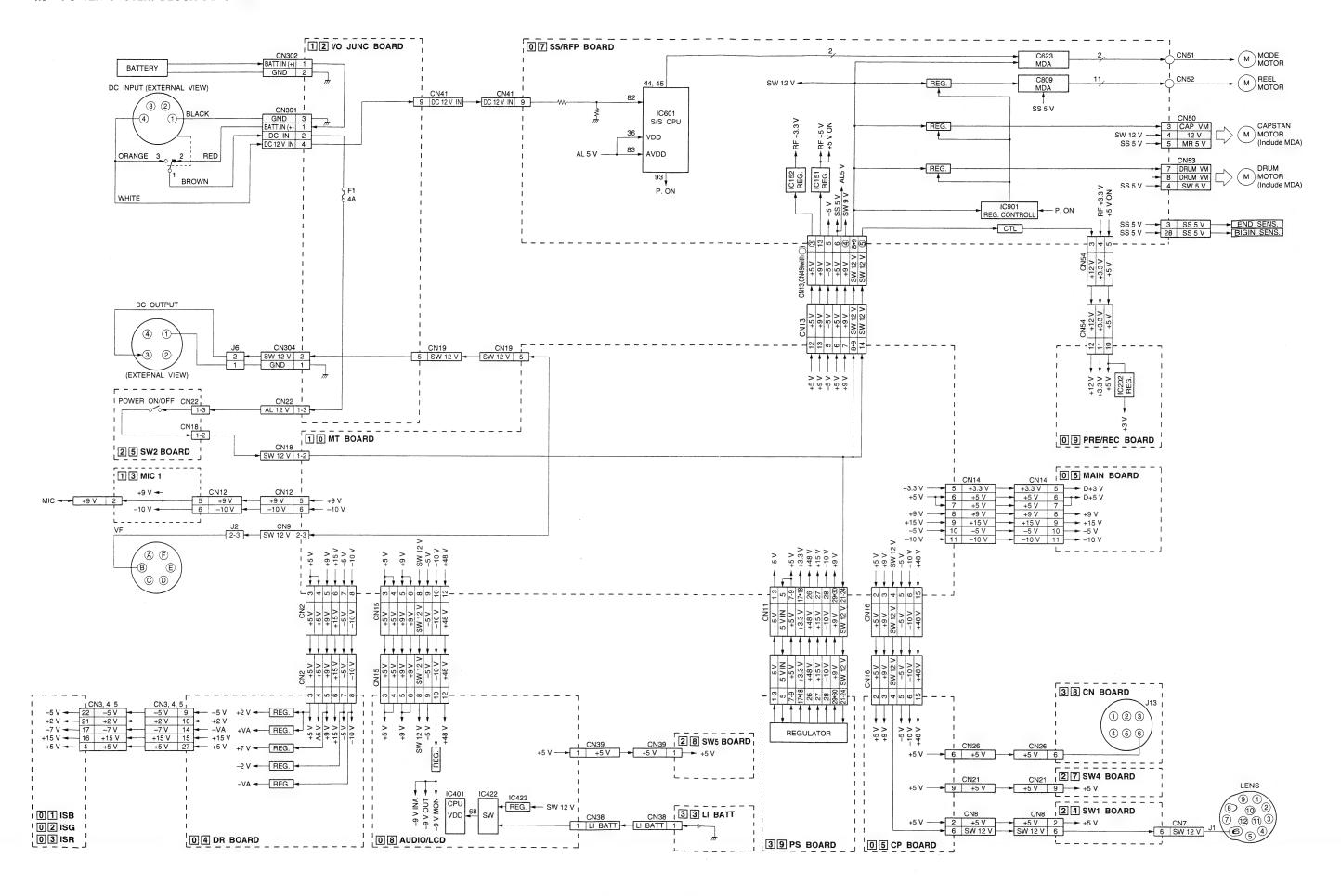




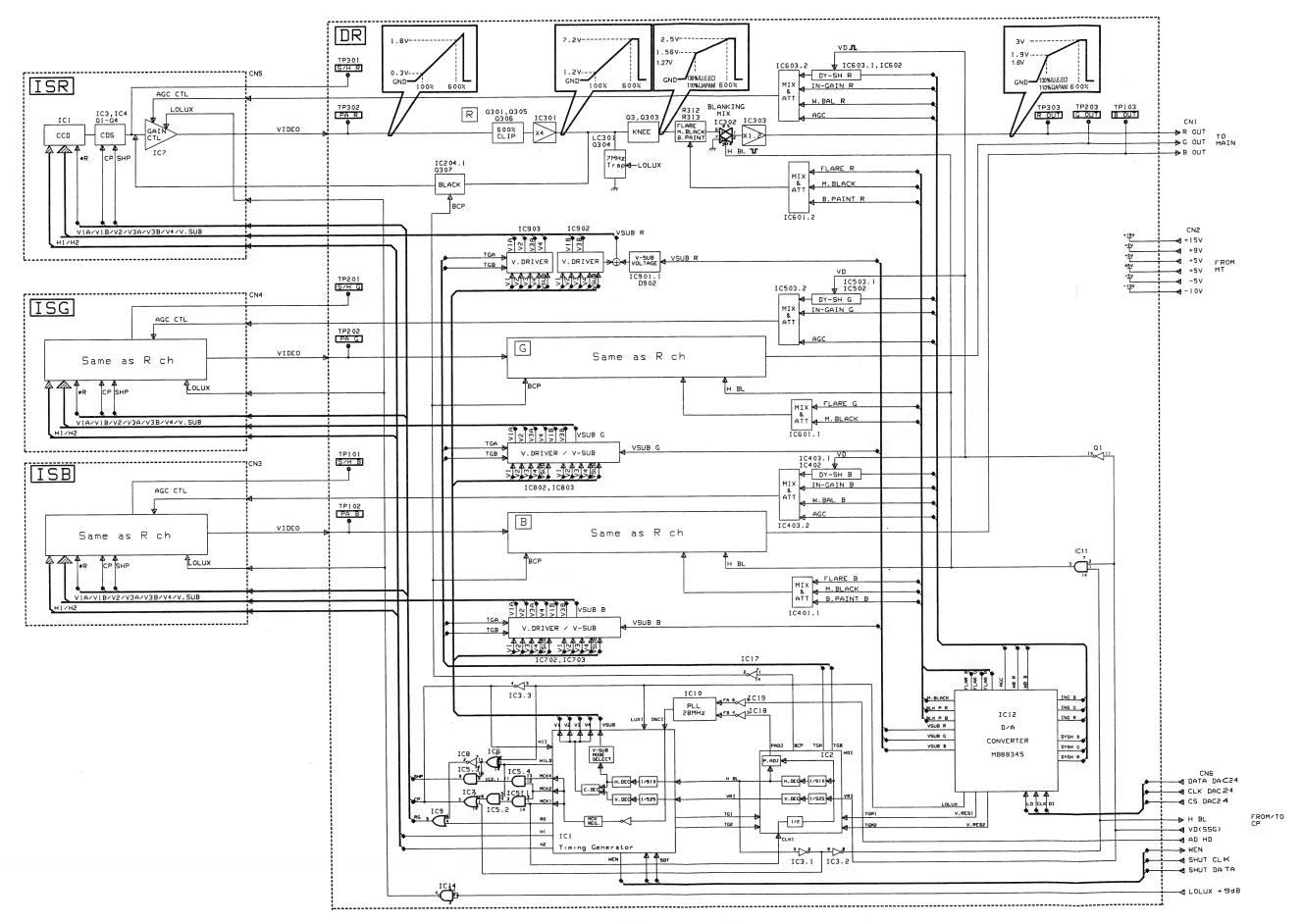


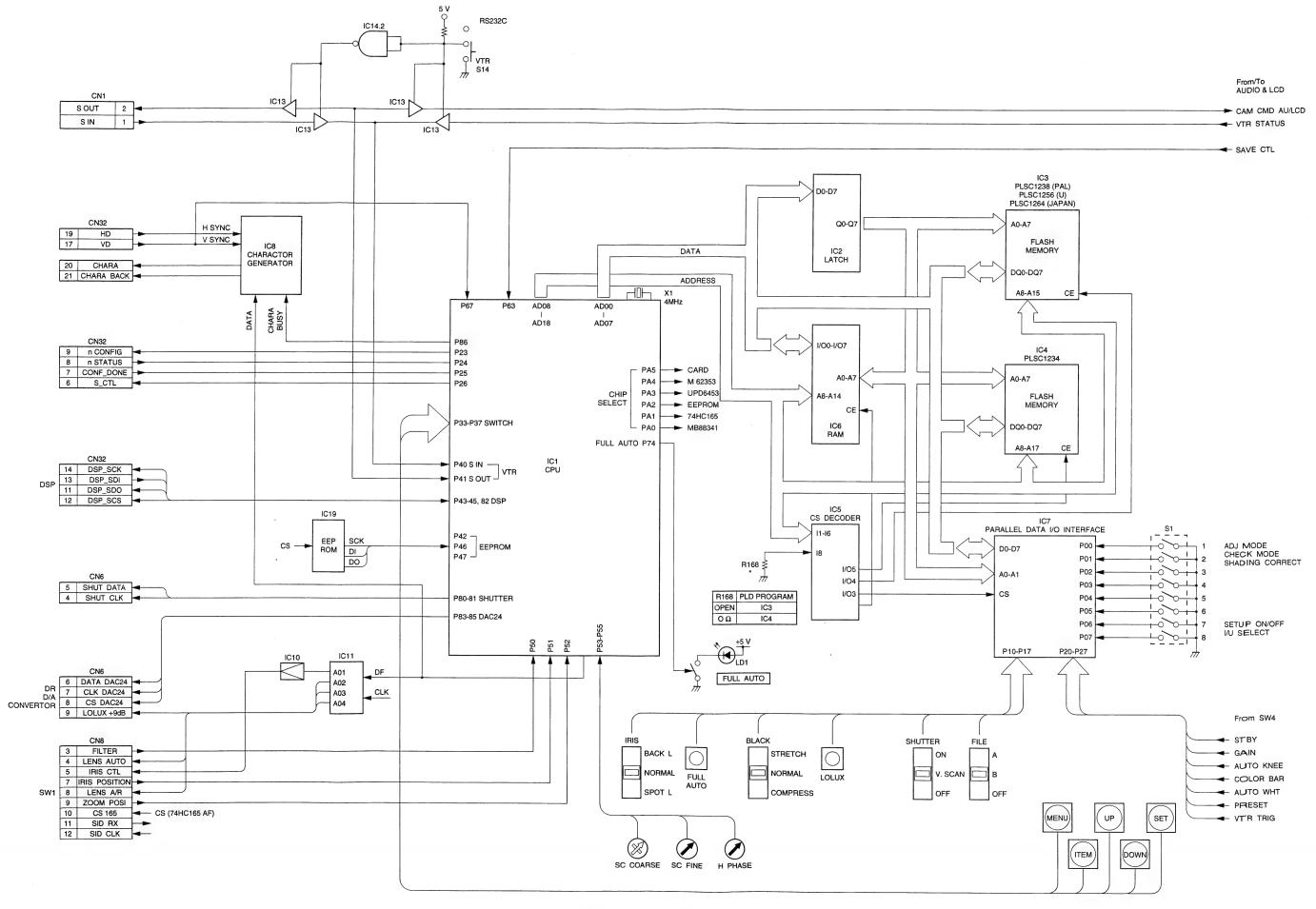
(DY-90U)

4.3 POWER SYSTEM BLOCK DIAGRAM



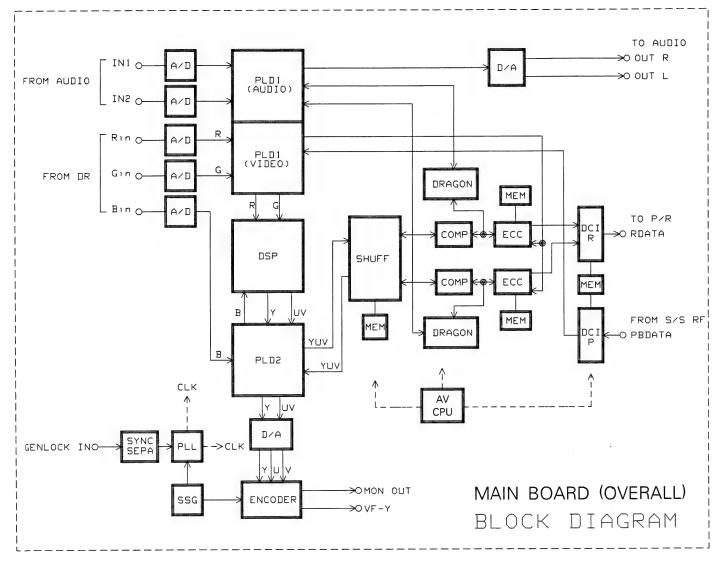
4.4 IS, DR BLOCK DIAGRAM

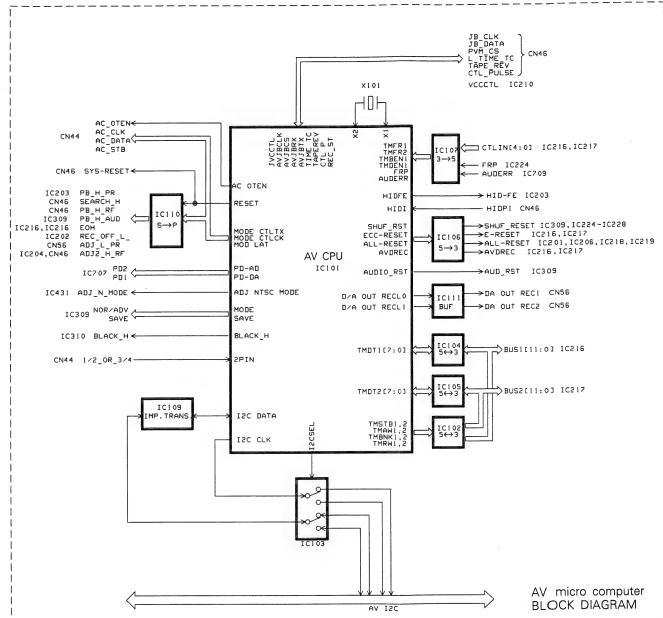


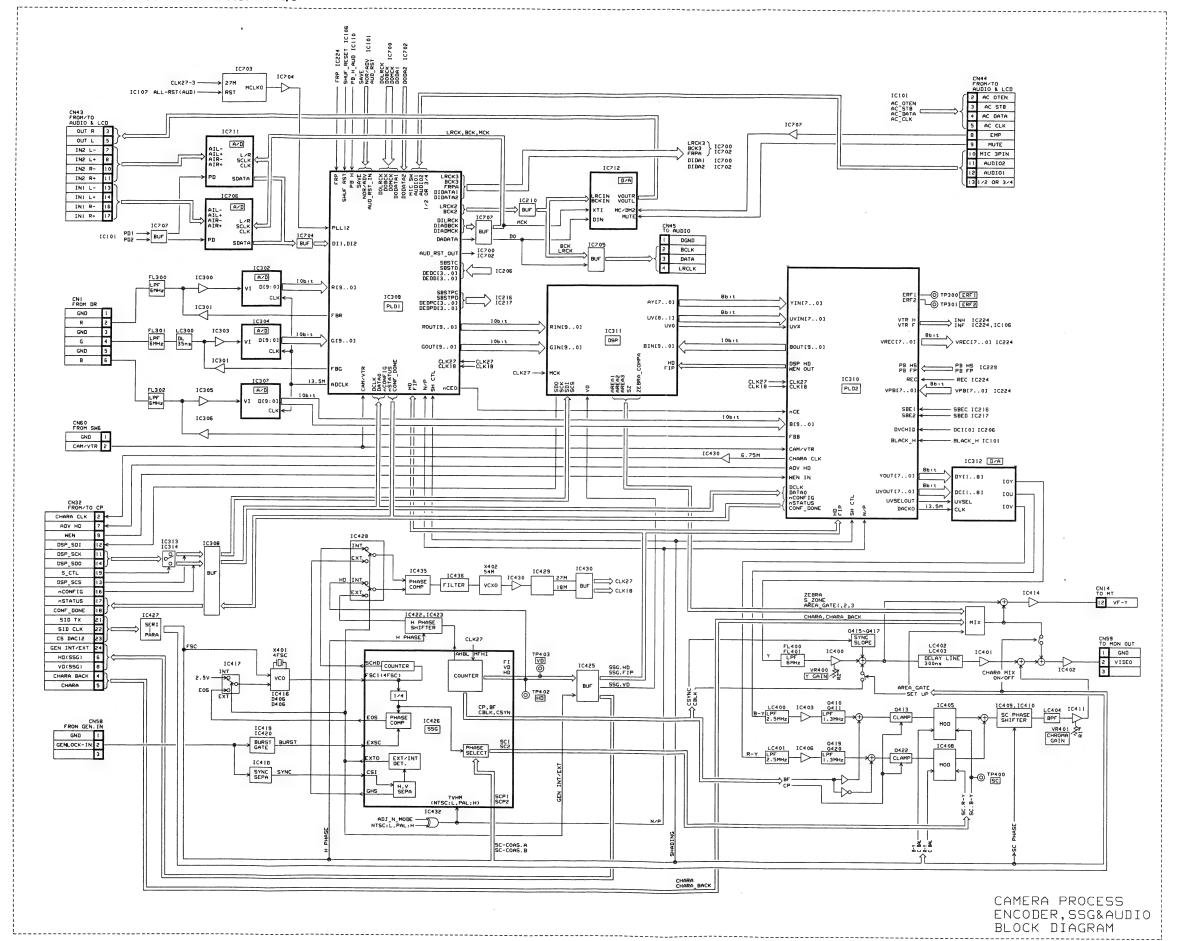


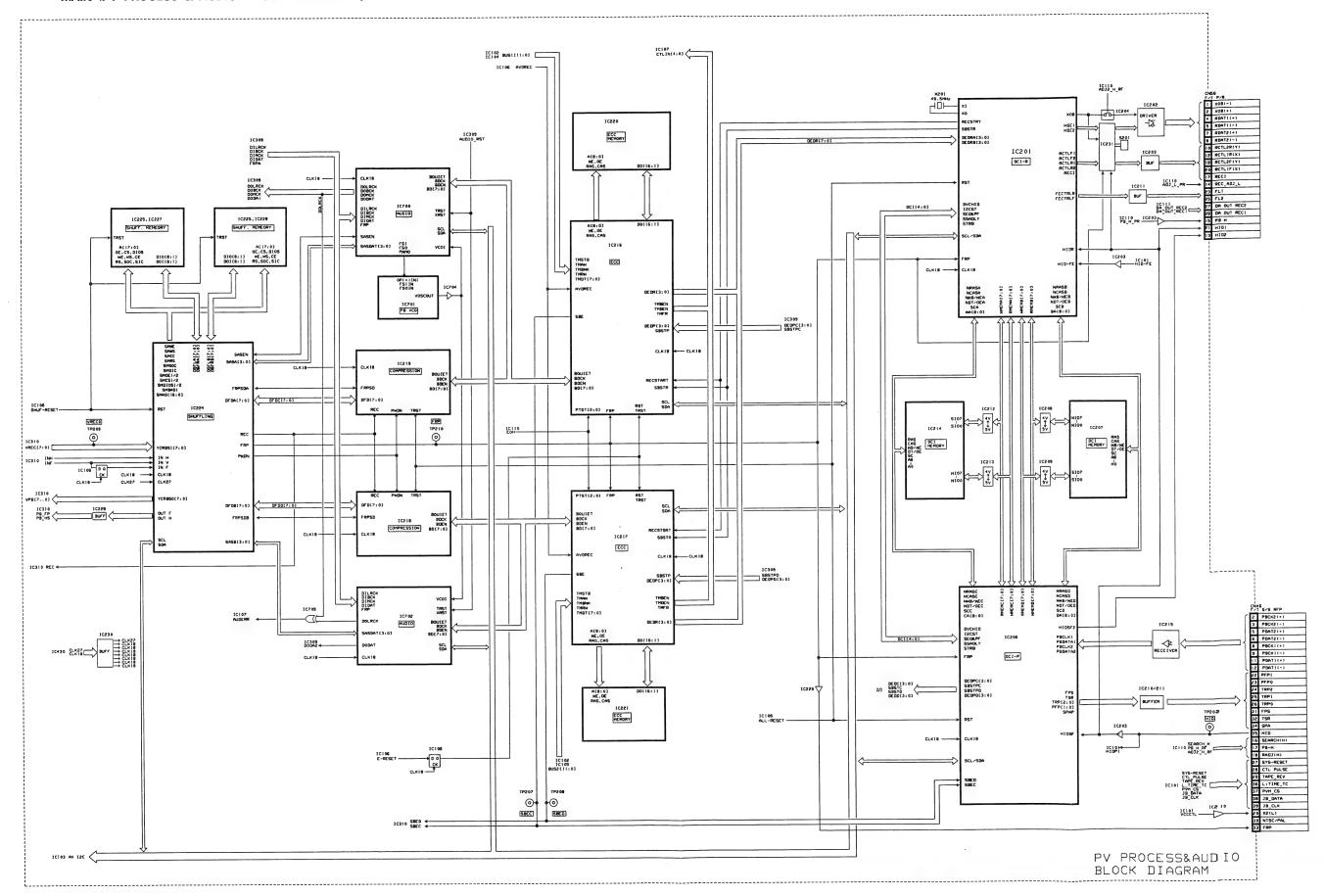
4.6 MAIN BLOCK DIAGRAM

- MAIN BOARD (OVERALL) & AV U-COM BLOCK DIAGRAM 1/3 -

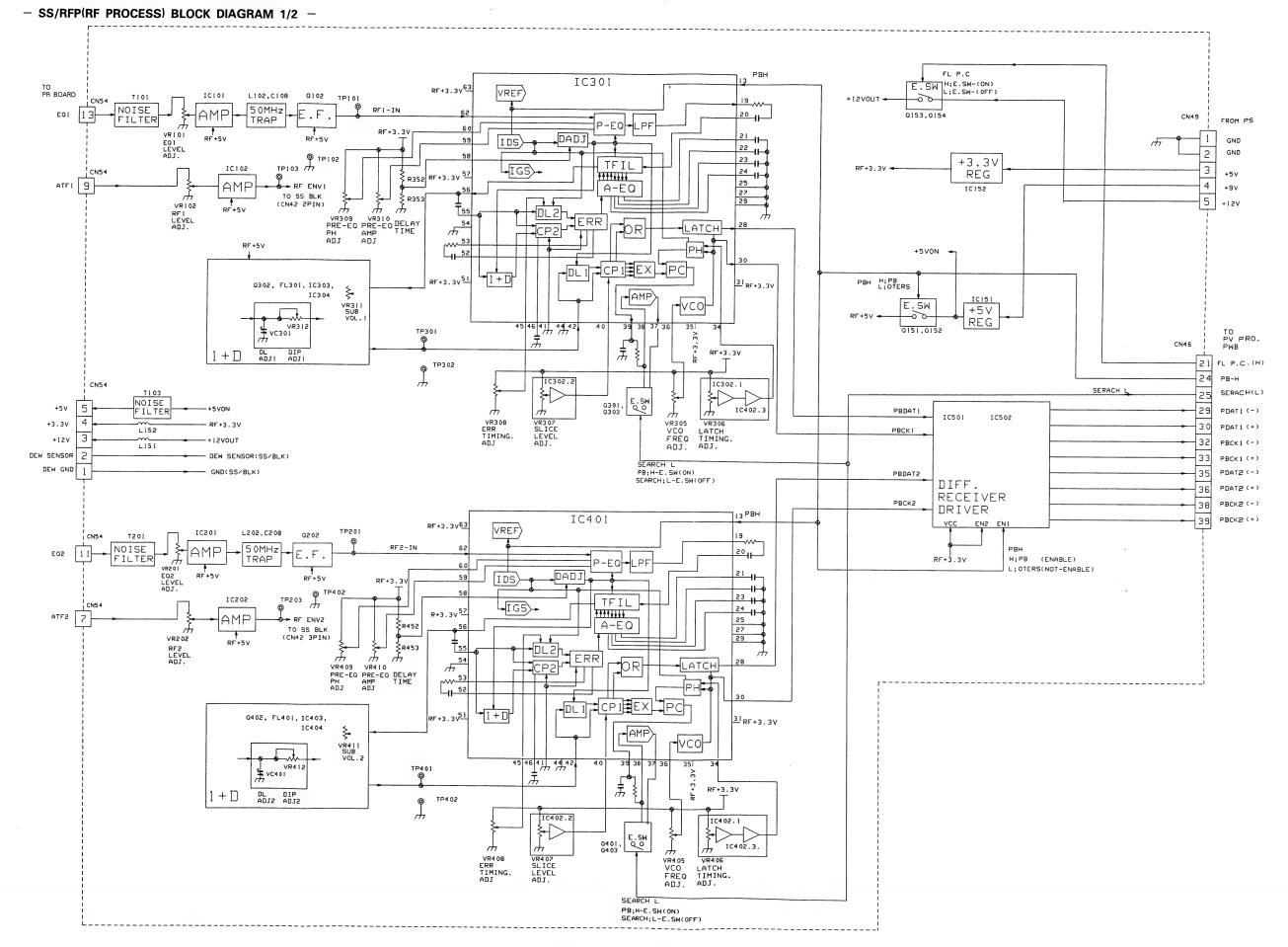


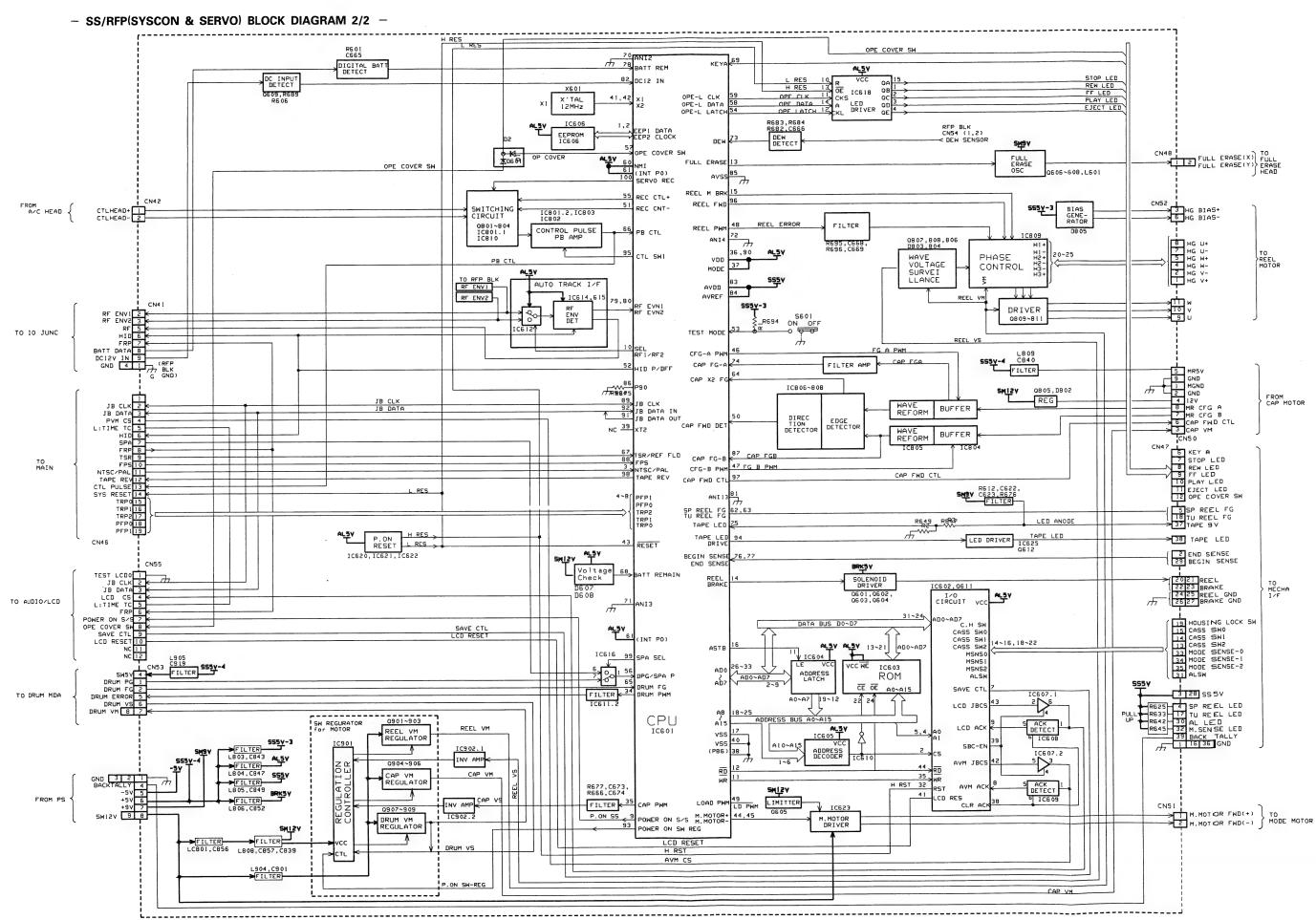






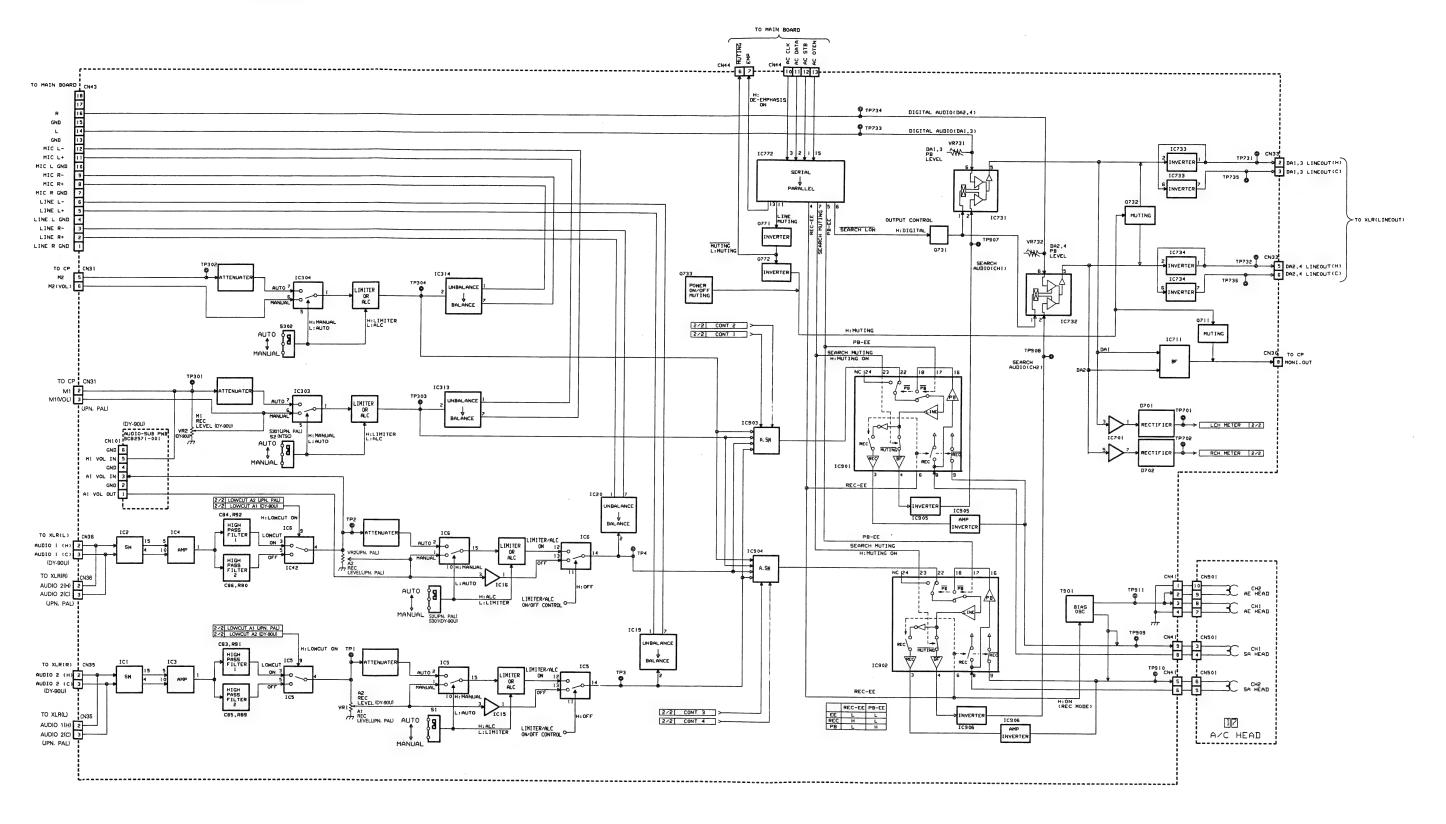
4.7 SS/RFP BLOCK DIAGRAM



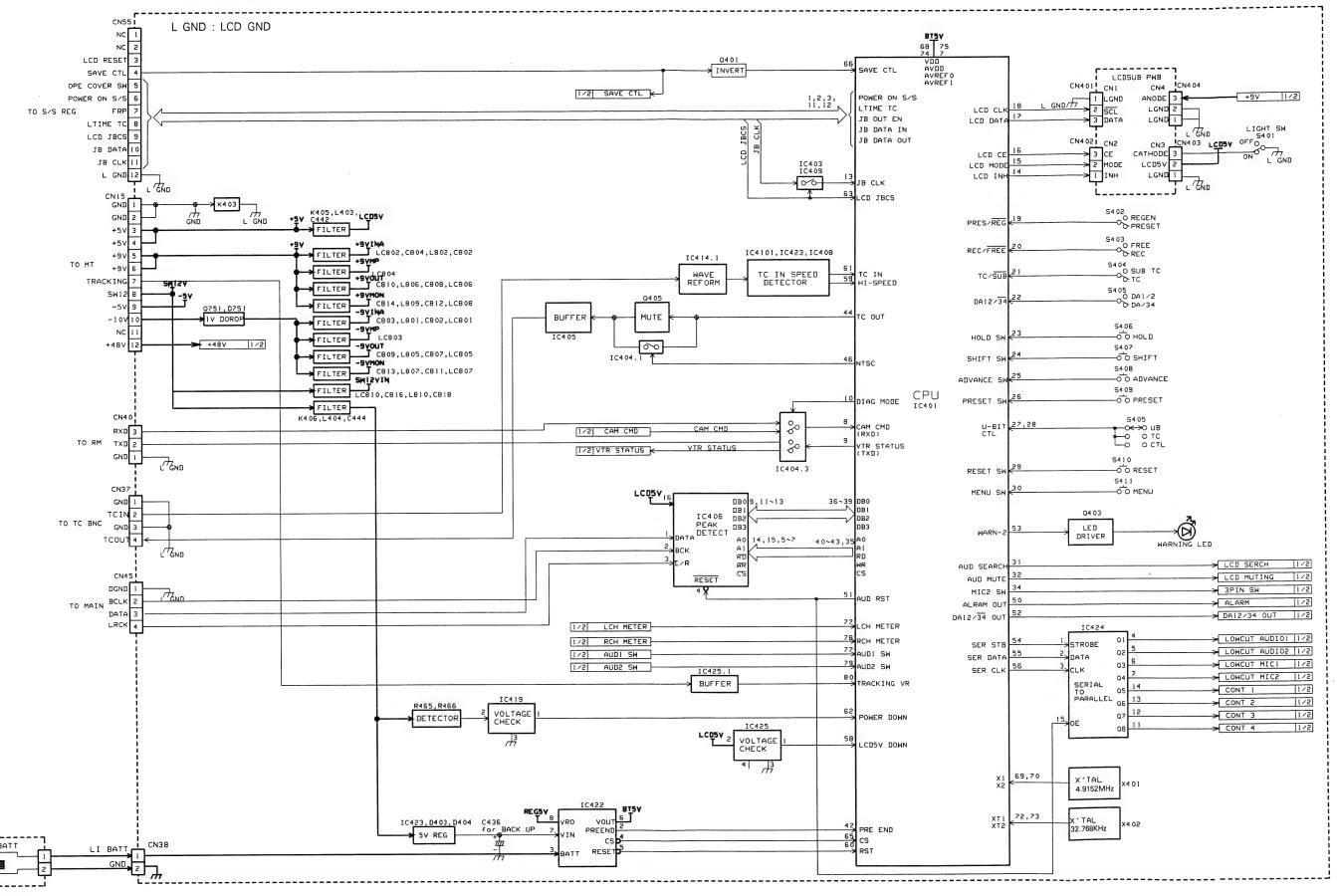


4.8 AUDIO & LCD BLOCK DIAGRAM

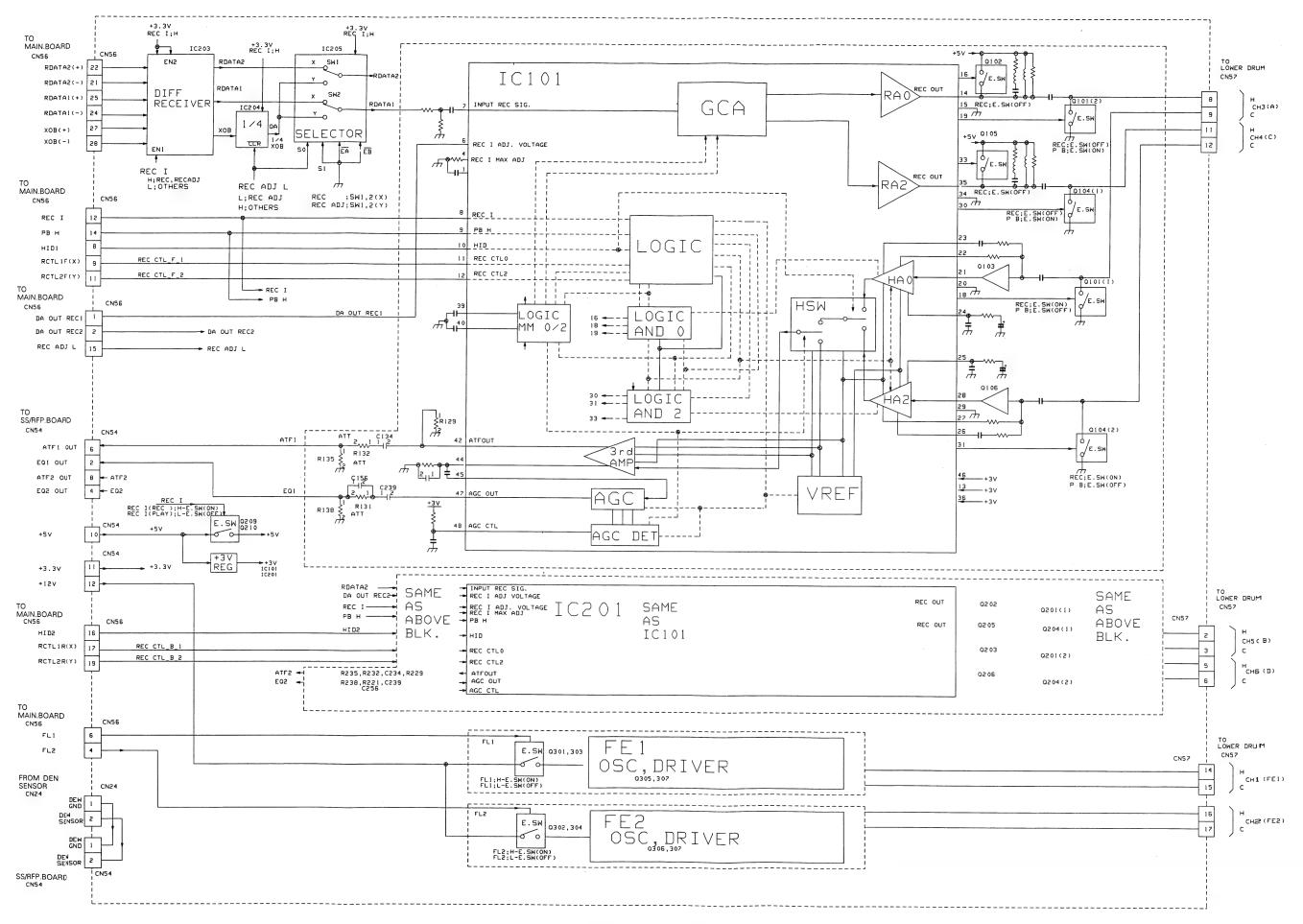
- AUDIO & LCD BLOCK DIAGRAM 1/2 -

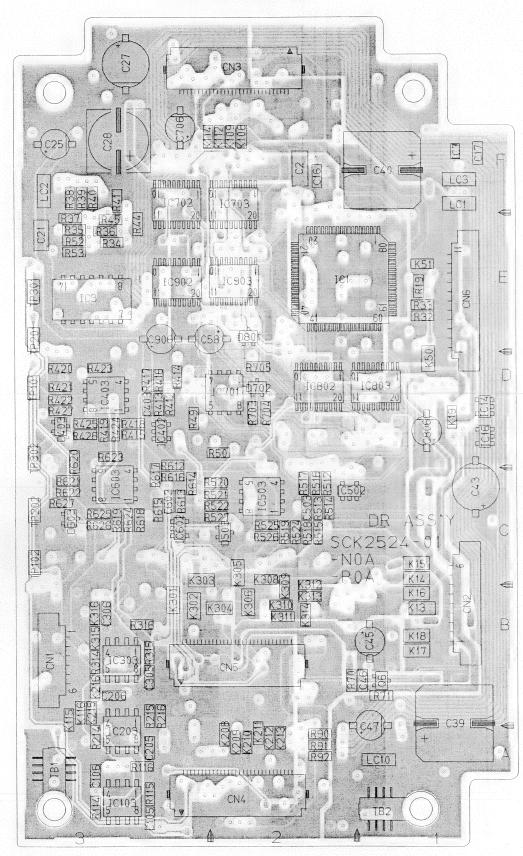


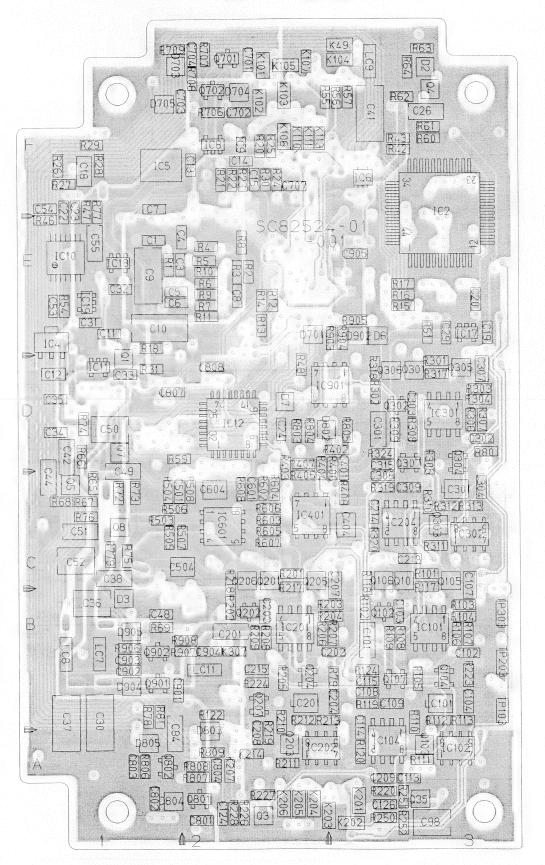
- AUDIO & LCD BLOCK DIAGRAM 2/2 -

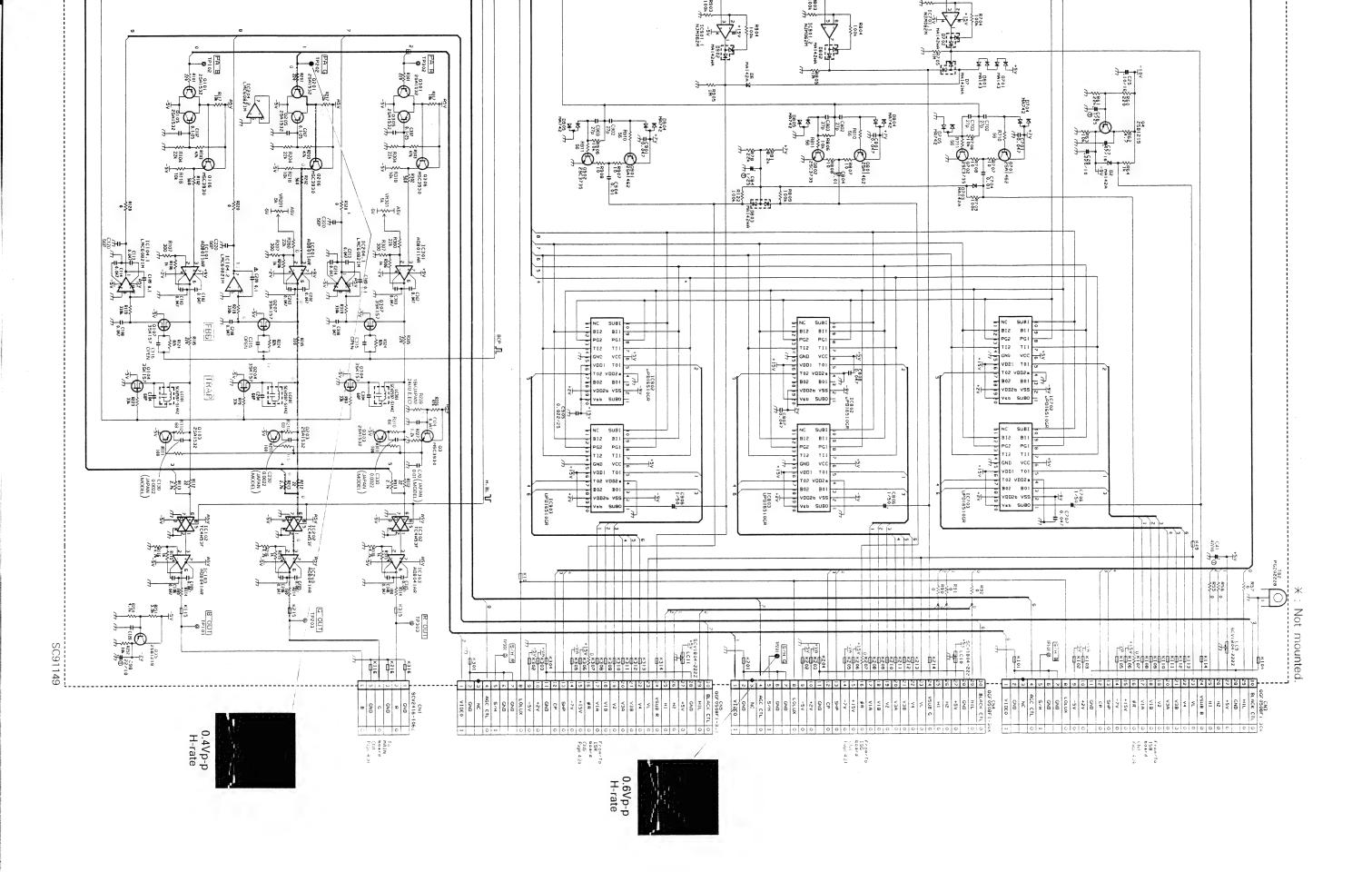


4.9 PR BLOCK DIAGRAM

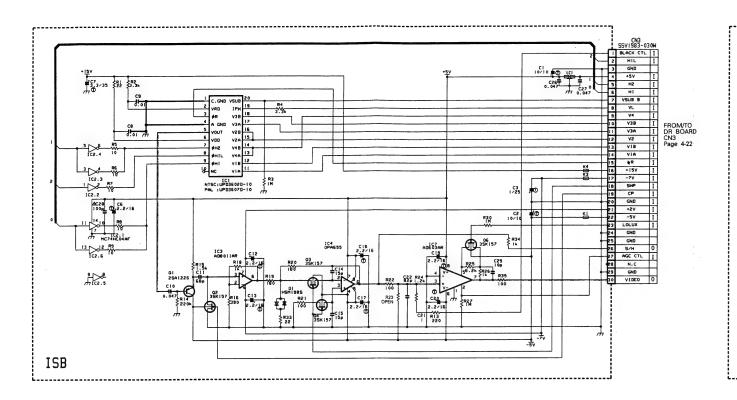


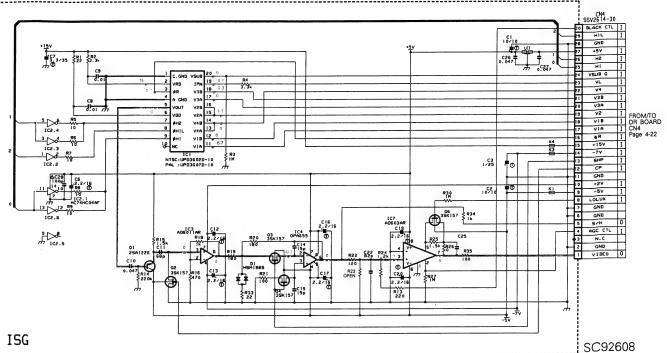


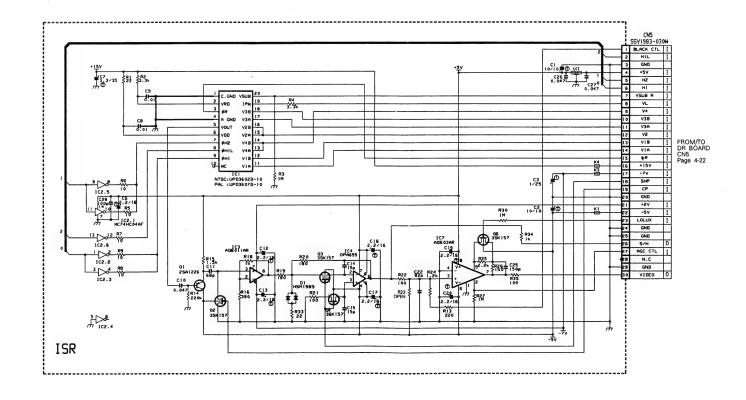


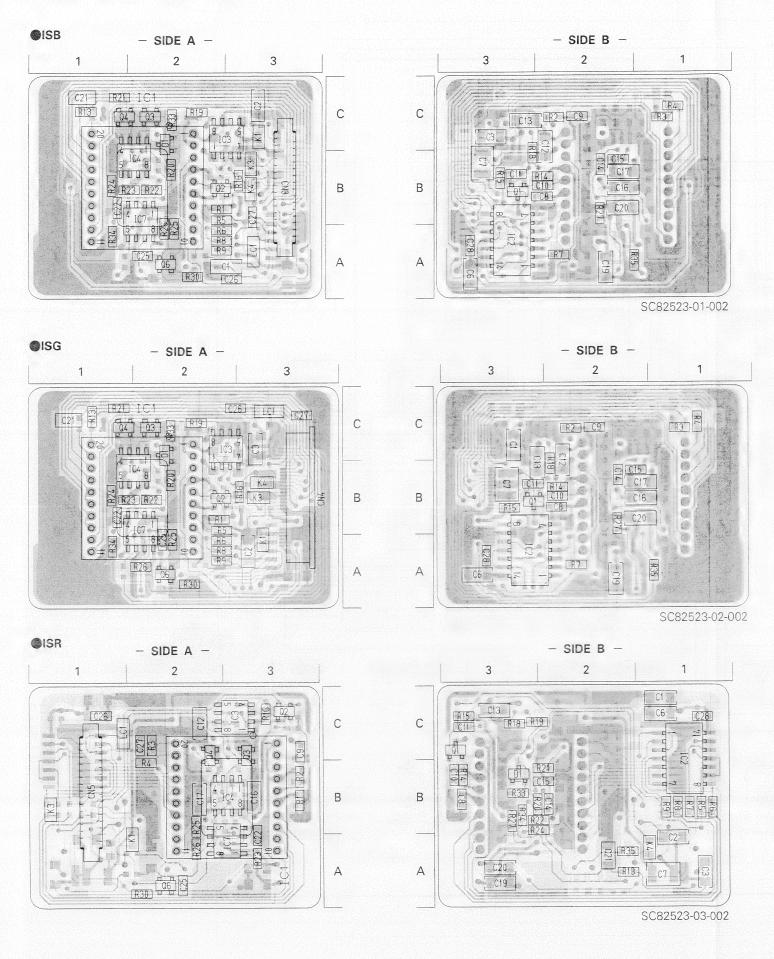


4.13 ISB/ISG/ISR BOARD SCHEMATIC DIAGRAM 02/03/04









ADDRESS TABEL OF BOARD PARTS

Each address may have an address error by one interval.

	A-10	С						
Side	e	Y	axis					
	L	—— X	axis					
IC1	A-2B	R6	A-2A	R33	A-2C	C19	B-2A	
IC2	B-3A	R7	B-2A	R34	A-1A	C20	B-2B	
IC3	A-2C	R8	A-2A	R35	B-1A	C21	A-1C	
IC4	A-2B	R9	A-2A			C22	A-1B	
IC7	A-2B	R13	A-1C	C1	A-2A	C25	A-2A	
		R14	B-2B	C2	A-3C	C26	A-3A	
Q1	B-3B	R15	B-3B	C3	B-3C	C27	A-3B	
Q2	A-2B	R16	A-3B	C6	B-3A	C28	B-3A	
Q3	A-2C	R18	B-2B	C7	B-3B			
Q4	A-1C	R19	A-2C	C8	B-2B	CN3	A-3B	
Q6	A-2A	R20	A-2B	C9	B-2C			
		R21	A-1C	C10	B-2B	LC1	A-3A	
D1	A-2C	R22	A-2B	C11	B-3B			
		R23	A-2B	C12	B-2C	K1	A-3C	
R1	A-2B	R24	A-1B	C13	B-3C	K3	A-3B	
R2	B-2C	R25	A-2A	C14	B-2B	K4	A-3B	
R3	B-1C	R26	A-2A	C15	B-2B			
R4	B-1C	R27	B-2B	C16	B-2B			
R5	A-2B	R30	A-2A	C17	B-2B			

ADDRESS TABEL OF BOARD PARTS

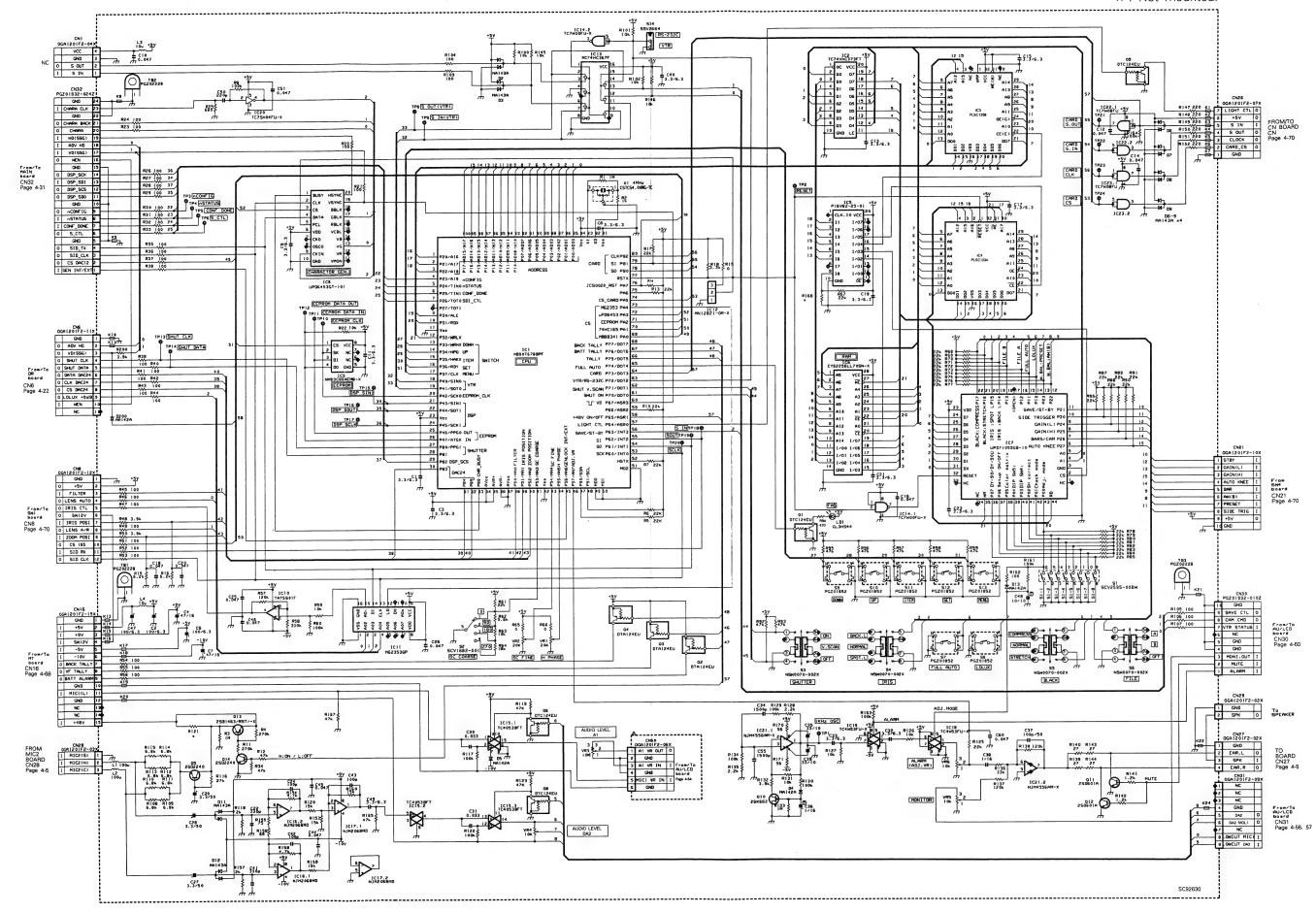
Each address may have an address error by one interval.

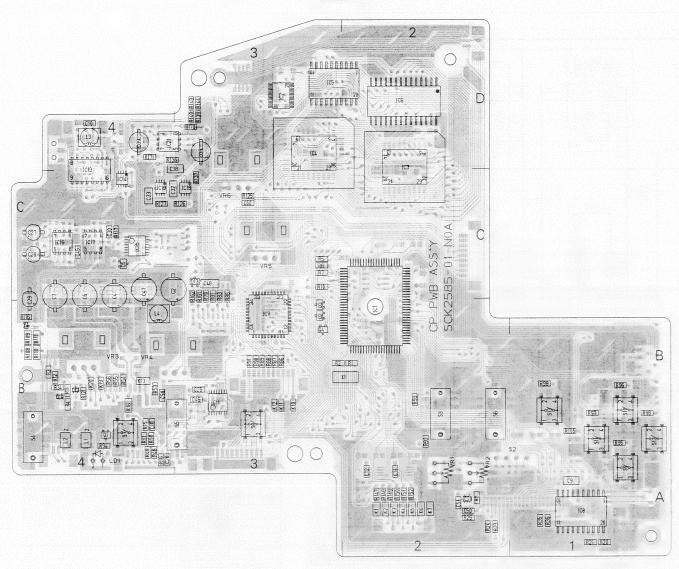
Each	addres	ss may	liave al	addies	55 61101	by one	microan
	A-10)					
Side	\Box	Y	axis				
	L	—_X	axis				
IC1	A-2B	R6	A-2A	R33	A-2C	C19	B-2A
IC2	В-ЗА	R7	B-2A	R34	A-1A	C20	B-2B
IC3	A-2C	R8	A-2A	R35	B-1A	C21	A-1C
IC4	A-2B	R9	A-2A			C22	A-1B
IC7	A-2B	R13	A-1C	C1	B-3C	C25	A-2A
		R14	B-2B	C2	A-3A	C26	A-2C
Q1	B-2B	R15	B-3B	C3	A-3C	C27	A-3C
Q2	A-2B	R16	A-2B	C6	В-ЗА	C28	B-3A
Q3	A-2C	R18	B-2B	C7	B-3B		
Q4	A-1C	R19	A-2C	C8	B-2B	CN4	A-3B
Q6	A-2A	R20	A-2B	C9	B-2C		
		R21	A-1C	C10	B-2B	LC1	A-3C
D1	A-2C	R22	A-2B	C11	B-3B		
		R23	A-1B	C12	B-2C	K1	A-3A
R1	A-2B	R24	A-1B	C13	B-2B	K3	A-3B
R2	B-2C	R25	A-2A	C14	B-2B	K4	A-3B
R3	B-1C	R26	A-2A	C15	B-2B		
R4	B-1C	R27	B-2B	C16	B-2B		
R5	A-2B	R30	A-2A	C17	B-2B		

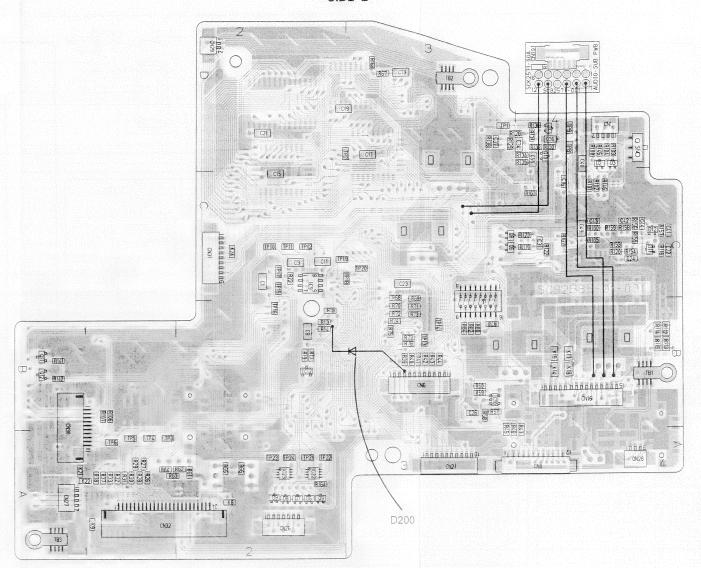
ADDRESS TABEL OF BOARD PARTS

Each address may have an address error by one interval.

	ii addioc						
	A-10						
Side	, _ _	X	axis axis				
IC1	A-2B	R6	B-1B	R33	B-3B	C19	B-3A
IC2	B-1C	R7	B-1B	R34	B-3B	C20	B-3A
IC3	A-3C	R8	B-1B	R35	B-2A	C21	B-2A
IC4	A-3B	R9	B-1B			C22	A-3A
IC7	A-2A	R13	B-2A	C1	B-1C	C25	A-2A
		R14	B-3B	C2	B-1A	C26	A-1C
Q1	B-3C	R15	B-3C	C3	B-1A	C27	A-2C
Q2	A-3C	R16	A-3C	C6	B-1C	C28	B-1C
Q3	A-3C	R18	B-3C	C7	B-1A		
Q4	A-2C	R19	B-2C	C8	B-3B	CN5	A-1B
Q6	A-2A	R20	B-2B	C9	A-3C		
		R21	B-2B	C10	B-3B	LC1	A-1C
D1	B-3B	R22	B-2B	C11	B-3C		
		R23	A-3A	C12	A-2C	K1	A-2A
R1	A-3B	R24	B-2B	C13	B-3C	K3	A-1B
R2	A-3B	R25	A-2B	C14	B-2B	K4	B-1A
R3	A-2C	R26	A-2A	C15	B-2B		
R4	A-2B	R27	B-3B	C16	A-3B		
R5	B-1B	R30	A-2A	C17	A-2B	1	

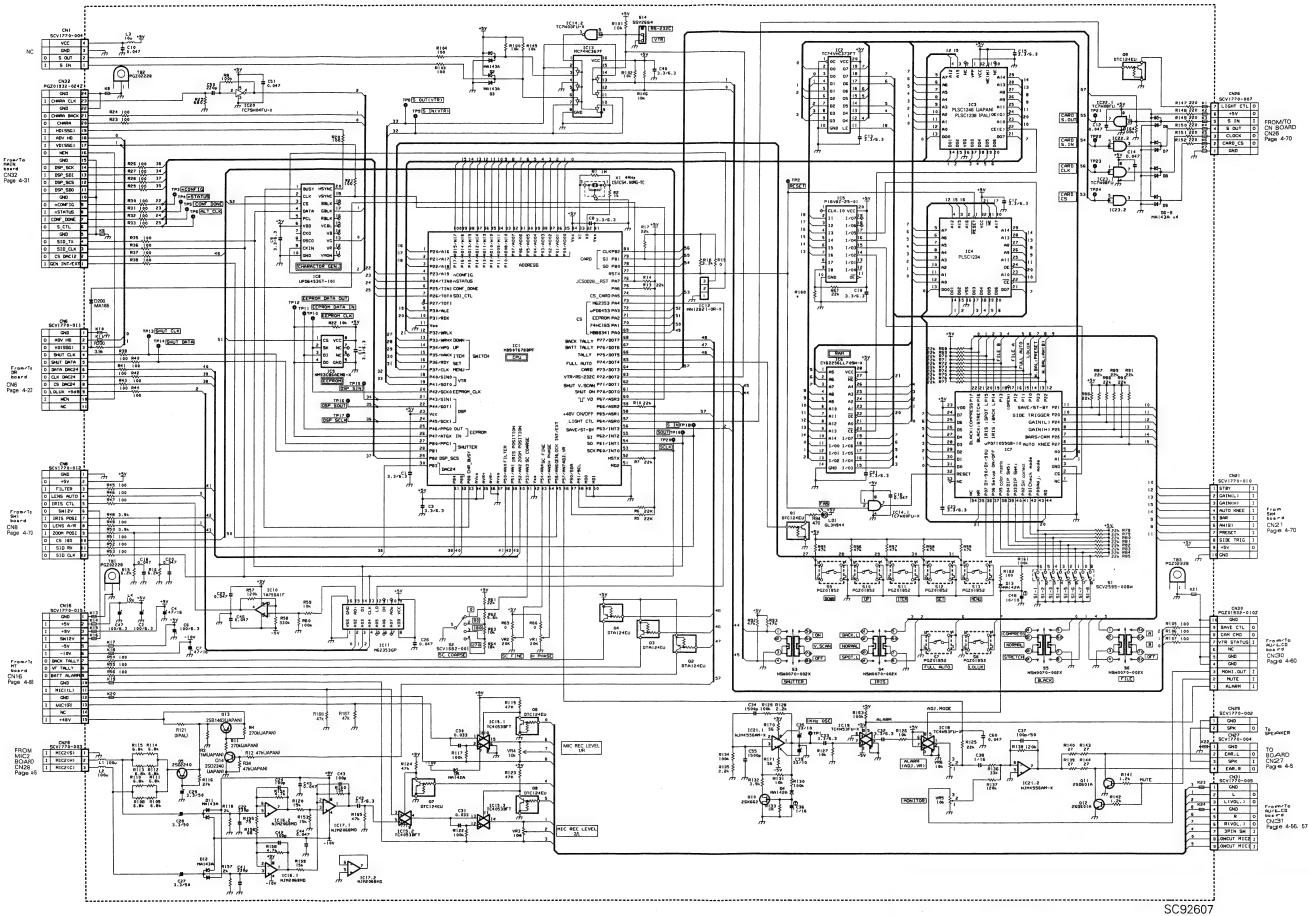




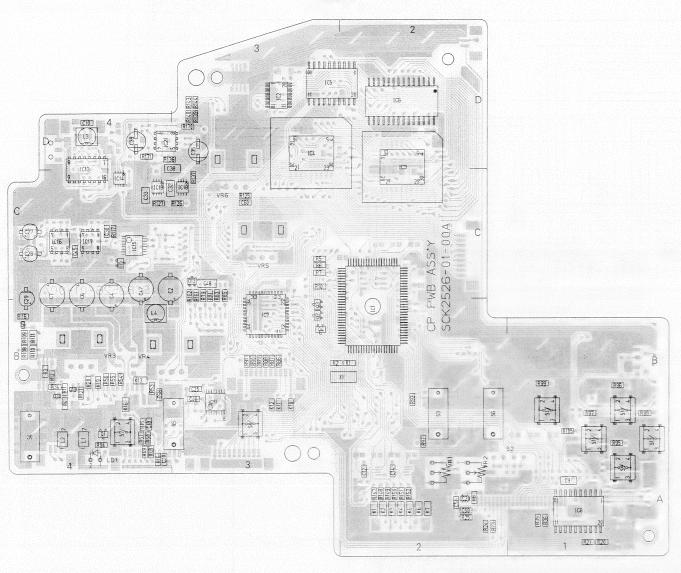


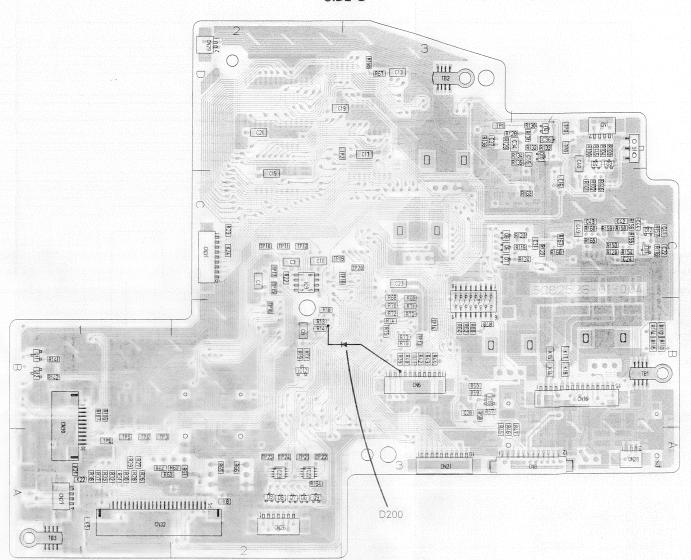
@ ADDRESS TABEL OF BOARD PARTS

Eac	h addres	ss may	have an	addre	ss error	by one	interval																								
	A-10	0																													
Side	الـــــ	L y	axis																												
O.G.		X																													
104				l D10	B-4C	R22	B-2C	R45	B-3A	R68	B-3B	R91	A-3B	B114	B-4B	R138	B-3D	R161	A-3B	C8	B-2B	C31	B-4C	L1	A-4A	TP20	B-3C	K5	A-2A	S1	B-3B
101	A-2B	Q1	A-4A A-3B	D12	A-3C	R23	A-2A	R46	B-3A	R69	B-3B	R92	A-2A	R115	B-4B	R139	A-3D	R162	A-3B	C9	A-1A	C32	A-4C	L2	A-4A	TP21	B-2A	K6	A-2A	S2	A-2A
102	A-3D A-2C	Q2 Q3	A-3B	DIS	A-30	R24	A-2A	R47	B-4A	R70	B-3B	R93	A-2B	R116	A-4B	R140	A-3D	R163	B-4C	C10	A-4D	C33	A-4C	L3	A-4D	TP22	B-2A	K7	A-2A	S3	A-2B
103	A-20	Q4	A-3B	R1	A-2B	R25	A-2A	R48	A-4A	R71	B-3B	R94	A-4A	R117	A-4C	R141	B-1B	R164	B-2A	C11	B-2C	C34	B-4D	L4	A-4B	TP23	B-2A	K8	B-2A	S4	A-4A
IC4	A-30 A-2D	Q5	A-3B A-4B	R2	A-3B	R26	B-1A	R49	A-4A	R72	B-3B	R95	A-1A	R118	B-4C	R142	B-1B	R165	B-4C	C12	A-2A	C35	A-3D			TP24	B-2A	K9	B-1A	S5	A-3A
IC5 IC6	A-2D	Q6	B-3C	R3	A-4B	R27	B-1A	R50	A-4A	R73	B-3B	R96	A-1B	R119	B-4C	R143	A-3D	R167	B-4C	C13	B-3D	C36	B-4D	TP1	B-3D			K10	A-3B	S6	A-2B
IC7	A-3B	Q8	B-3C	R4	A-4B	R28	B-1A	R51	A-4A	R74	B-3B	R97	A-1B	R120	B-4C	R144	A-3D	R168	B-3D	C14	A-2A	C37	B-3D	TP2	B-2C	CN1	B-4D	K11	A-3B	S7	A-4A
IC8	A-1A	Q9	B-2A	R5	A-3C	R29	B-1A	R52	A-4B	R75	B-3B	R98	A-1B	R121	A-4B	R145	B-4D	R170	A-3D	C15	B-2C	C38	A-4C	TP3	B-1A	CN6	B-3B	K12	A-3B	S8	A-3A
IC9	B-2C	Q10	B-4C	R6	A-3C	R30	B-1A	R53	A-4B	R76	B-3B	R99	A-1B	R122	B-4C	R146	B-4C	R171	A-4C	C16	B-4C	C39	A-4D	TP4	B-1A	CN8	B-4A	K13	A-4B	S9	A-1A
IC10	B-3B	Q11	B-1B	R7	A-3C	R31	B-1A	R54	A-4B	R77	B-3B	R100	B-4D	R123	B-4C	R147	A-2A			C17	B-3C	C40	B-4C	TP5	B-1A	CN16	B-4B	K14	B-4B	S10	A-1B
IC11	A-3B	Q12	B-1B	R8	A-2A	R32	B-1A	R55	A-4B	R78	B-3B	R101	B-4C	R125	A-3C	R148	A-2A	VR1	A-2A	C18	A-4A	C41	B-4C	TP6	B-1A	CN21	B-3A	K15	B-4B	S11	A-1A
IC12	B-2B	Q13	A-4B	R10	A-3C	R33	B-1A	R56	A-4B	R79	A-3B	R102	B-4C	R126	A-3C	R149	A-2A	VR2	A-2A	C19	B-2D	C42	B-4C	TP8	B-4D	CN26	B-2A	K16	A-4B	S12	A-1A
IC13	A-4C	Q14	A-4B	R11	A-4B	R34	A-4B	R57	B-3B	R80	B-3B	R103	B-4D	R127	A-4C	R150	A-2A	VR3	A-4B	C20	A-4A	C43	B-4C	TP9	B-4D	CN27	B-1A	K17	B-4B	S13	A-1B
IC14	A-4C			R12	A-4B	R35	A-1A	R58	B-3B	R81	A-3B	R104	B-4D	R128	B-4D	R151	A-2A	VR4	A-4B	C21	B-2D	C44	B-4C	TP10	B-2C	CN28	B-4A	K18	B-4B	S14	B-4D
IC15	A-4C	D2	B-4C	R13	B-2B	R36	A-1A	R59	B-3B	R82	B-3B	R105	A-1A	R129	B-3D	R152	A-2A	VR5	A-3C	C22	B-4C	C45	A-4C	TP11	B-2C	CN29	B-2D	K19	A-4B		
IC16	A-4C	D3	B-4C	R14	B-2B	R37	B-1A	R60	B-3B	R83	A-3B	R106	B-1B	R130	B-4D	R153	B-4C	VR6	A-3C	C23	B-3C	C46	A-3B	TP12	B-2C	CN30	B-1A	K20	A-4B	X1	A-2B
IC17	A-4C	D4	B-4D	R15	A-4A	R38	B-1A	R61	B-2A	R84	B-3B	R107	B-1B	R131	B-4D	R154	B-4C			C24	B-4C		A-4B	TP13	B-3B	CN31	B-2C	K21	B-1A		
IC18	A-3C	D5	A-4C	R16	A-4A	R39	B-3B	R62	B-2A	R85	A-3B	R108	A-4B	R132	B-4D	R155	B-4C	C1	B-2C	C25	A-3B	C48	A-3C	TP14	B-3B	CN32	B-1A	K22	B-1A	LD1	A-4A
IC19	A-4C	D6	B-2A	R17	B-2B	R40	B-3B	R63	B-1A	R86	A-3B	R109	A-4B	R133	B-4D	R156	B-4C	C2	A-4B	C26	B-3B	C49	B-4C	TP15	B-2C			K24	B-2C		
IC20	A-2A	D7	B-2A	R18	B-2B	R41	B-3B	R64	B-1A	R87	A-3B	R110	A-4B	R134	B-4C	R157	B-4C	C3	B-2C	C27	A-4C	C50	A-2A	TP16	B-2B	K1	A-2A		- 4-		
IC21	A-4D	D8	B-2A	R19	B-2B	R42	B-3B	R65	B-2A	R88	A-3B	R111	A-4B	R135	B-4C	R158	B-4C	C4	A-4B	C28	A-4C	C51	A-2A	TP17	B-2C	K2	A-2A	TB1	B-4B		
C22	B-2A	D9	B-2A	R20	A-1A	R43	B-3B	R66	B-2A	R89	A-3B	R112	B-4B	R136	A-4C	R159	B-4C	C6	A-4B	C29	A-4B	C55	B-4C	TP18	B-3C	K3	A-2A	TDO	B-3D		
IC23	B-2A	D11	B-4C	R21	A-1A	R44	B-3B	R67	B-3D	R90	A-3B	R113	B-4B	R137	A-3C	R160	B-4C	107	A-4B	C30	A-4C	C60	A-3C	TP19	B-2C	K4	A-2A	183	B-1A		









ADDRESS TABEL OF BOARD PARTS

Each address may have an address error by one interval.

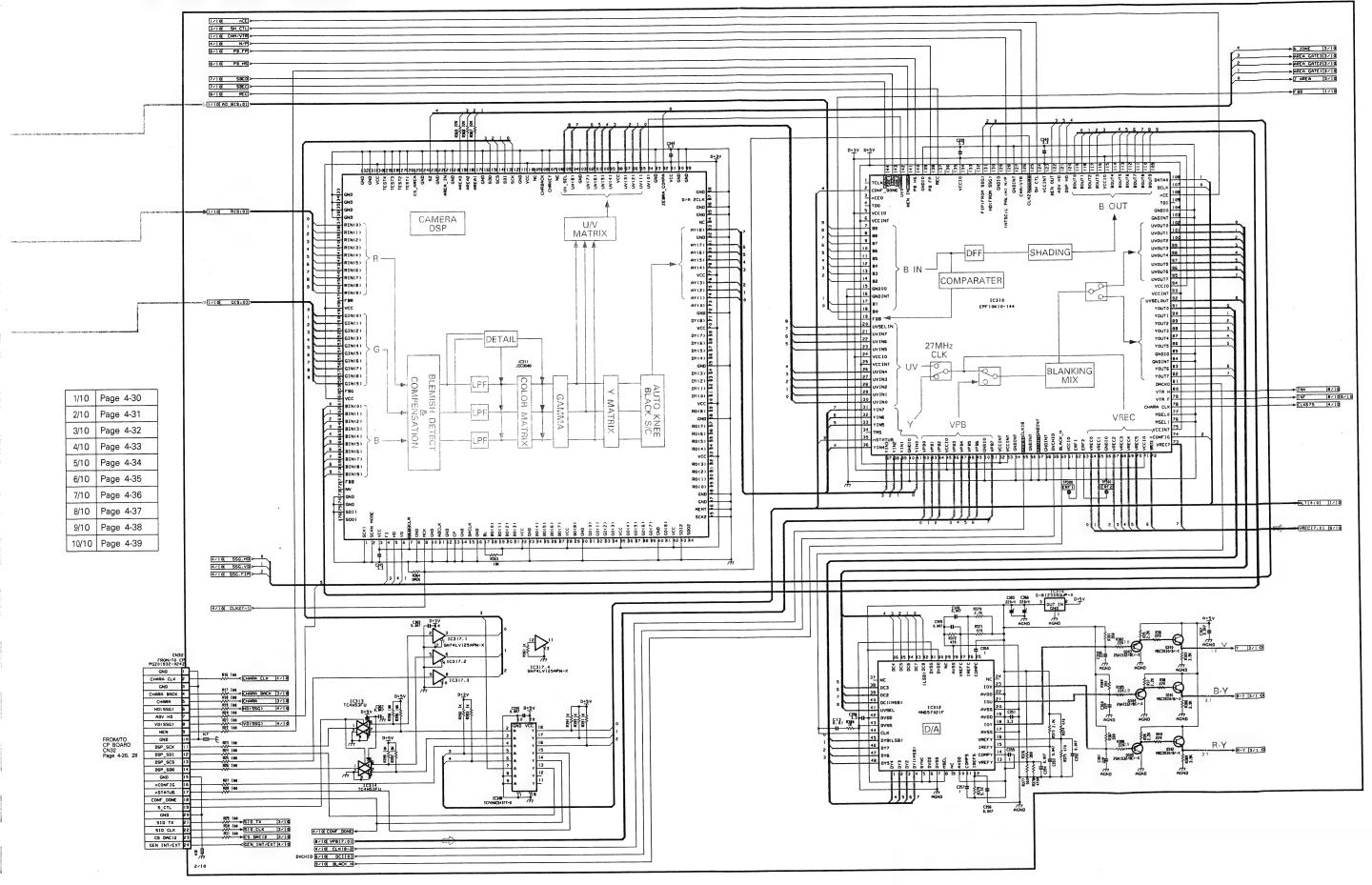
Eac	n addres	ss may	nave an	addres	ss error i	by one	mervai.																											
	A-10	0																																
Sid	a	LY	axis																															
		X																																
				1044	D 40 1	Dos	A 4 A !	B44	n an I	l nez	חמח	l Doo	A-3B	D110	B-4B	D126	A 40	D150	B-4C	104	A-4B	1000	A-4C	C51	A 0 A	TP16	B-2B	124	A O A	LKO4	B-2C	LD4	A-4A	1
101	A-2B	Q1	A-4A	DII		R21	A-1A		B-3B	R67	B-3D B-3B	R90 R91	A-3B	R114	B-4B	R136	A-4C A-3C	R160	B-4C	C6		C28		C55	A-2A B-4C	TP17	B-2C	K1	A-2A	K24	D-20	LUI	A-4A	
102	A-3D	Q2		D12		R22	B-2C	R45		R68 R69		R92	A-3B A-2A	R115	B-4B	R138		R161	A-3B	C7	A-4B A-4B	C29 C30	A-4B A-4C	C60	A-3C	TP18		K3	A-2A A-2A	TB1	B-4B			
103		Q3	THE RESIDENCE OF STREET	D13	A-3C	R23 R24	A-2A A-2A	R46		R70	B-3B	R93	A-2B	R116	A-4B	R139		R162	A-3B	C8	B-2B	C31	B-4C	000	A-30	TP19	B-3C	KA	A-2A A-2A	TB2	B-3D			
104	A-3C	Q4	A-3B	Di	A 2D	R25	A-2A A-2A	R48		R71	B-3B	R94	A-2B A-4A	R117	A-4C	R140	A-3D	R163	B-4C	C9	A-1A	C32	A-4C	14	A-4A	TP20	B-3C	K5	A-2A A-2A	TB3	B-1A			
105		Q5 Q6	A-4B B-4C	R1 R2	A-3B A-3B	R26	B-1A	R49		R72	B-3B	R95	A-1A	R118	B-4C	R141		R164	B-2A	C10	A-4D	C33	A-4C	12	A-4A	TP21	B-2A	KE	A-2A A-2A	100	D-14			
100	A-2D A-3B	Q7	B-4C	R3	A-3B A-4B	R27	B-1A	R50		R73	B-3B	R96	A-1B	R119	B-4C	R142		R165	B-4C	C11	B-2C	C34	B-4D	13	A-4D	TP22		K7	A-2A	Q1	B-3B			
107		Q8	B-4C	R4	A-4B	R28	B-1A	R51		R74	B-3B	R97	A-1B	R120	B-4C	R143	A-3D	R166	B-4C	C12		C35	A-3D	14	A-4B	TP23	B-2A	K8	B-2A	S2	A-2A			
109	B-2C	Q9	B-2A	R5	A-3C	R29	B-1A	R52	A-4B	R75	B-3B	R98	A-1B	R121	A-4B	R144	A-3D	R167	B-4C	C13	B-3D	C36	B-4D	- '	7. 10	TP24	B-2A	K9	B-1A	S3	A-2B			
1010	B-3B	Q10	B-4C	R6	A-3C	R30	B-1A	R53	A-4B	R76	B-3B	R99	A-1B	R122	B-4C	R145	B-4D	R168	B-3D	C14		C37	B-3D	TP1	B-4D	-		K10	A-3B	S4	A-4A			
IC11	A-3B	Q11	B-1B	R7	A-3C	R31	B-1A	R54		R77	B-3B	R100	B-4D	R123	B-4C	R146	B-4C	R170	A-3D	C15	B-2C	C38	A-4C	TP2	B-3C	CN1	B-4D	K11	A-3B	S5	A-4A			
IC12		Q12	B-1B	R8	A-2A	R32	B-1A	R55		R78	B-3B	R101	B-4C	R124	B-4C	R147	A-2A	R171	A-4C	C16	B-4C	C39	A-4D	TP3	B-2A	CN6	B-3B	K12	A-3B	S6	A-2B			
IC13		Q13		R10	A-3C	R33	B-1A	R56		R79	A-3B	R102	B-4C	R125	A-3C	R148	A-2A			C17	B-3C	C40	B-4C	TP4	B-1A	CN8	B-4A	K13	A-4B	S7	A-4A			
IC14		Q14	A-4B	R11	A-4B	R34	A-4B	R57	B-3B	R80	B-3B	R103	B-4D	R126	A-4C	R149	A-2A	VR1	A-2A	C18	A-4A	C41	B-4C	TP5	B-1A	CN16	B-4B	K14	B-4B	S8	A-3A			
1015	A-4C			R12	A-4B	R35	A-1A	R58	B-3B	R81	A-3B	R104	B-4D	R127	A-4C	R150	A-2A	VR2	A-2A	C19	B-3D	C42	B-4C	TP6	B-1A	CN21	В-ЗА	K15	B-4B	S9	A-1A			
IC16		D2	B-4C	R13	B-2B	R36	A-1A	R59	B-3B	R82	B-3B	R105	A-1A	R128	B-4D	R151	A-2A	VR3	A-4B	C20	A-4A	C43	B-4C	TP8	B-4D	CN26	B-2A	K16	A-4B	S10	A-1B			
IC17	A-4C	D3	B-4C	R14	B-2B	R37	B-1A	R60	B-3B	R83	A-3B	R106	B-1B	R129	B-4D	R152	A-2A	VR4	A-4B	C21	B-2D	C44	B-4C	TP9	B-4D	CN27	B-1A	K17	B-4B	S11	A-1A			
IC18	A-3C	D4	B-4D	R15	A-4A	R38	B-1A	R61	B-2A	R84	B-3B	R107	B-1B	R130	B-4D	R153	B-4C	VR5	A-3C	C22	B-4C	C45	A-4C	TP10	B-2C	CN28	B-4A	K18	B-4B	S12	A-1A			
IC19	A-4C	D5	A-4C	R16	A-4A	R39	B-3B	R62	B-2A	R85	A-3B	R108	A-4B	R131	B-4D	R154	B-4C	VR6	A-3C	C23	B-3C	C46	A-3B	TP11	B-2C	CN29	B-2D	K19	A-4B	S13	A-1B			
IC20	A-2A	D6	B-2A	R17	B-2B	R40	B-3B	R63	B-2A	R86	A-3B	R109	A-4B	R132	B-4D	R155	B-4C			C24	B-4C		A-4B	TP12	B-2C	CN30	B-1A	K20	A-4B	S14	B-4D			
IC21	A-4D	D7	B-2A	R18	B-3B	R41	B-3B	R64	B-2A	R87	A-3B	R110	A-4B	R133	B-4D	R156	B-4C	C1	B-2C	C25		C48	A-3C	TP13	B-3B	CN31	B-2C	K21	B-1A					
IC22	B-2A	D8	B-2A	R19	B-2B	R42	B-3B	R65	B-2A	R88	A-3B	R111	A-4B	R134	B-4C	R157	B-4C	C2	A-4B	C26	B-3B	C49	B-4C	TP14	B-3B	CN32	B-2A	K22	B-1A	X1	A-3B			
1023	B-2A	D9	B-2A	R20	A-1A	R43	B-3B	R66	B-2A	R89	A-3B	R112	B-4B	R135	B-4C	R158	B-4C	C3	B-2C	C27	A-4C	C50	A-2A	TP15	B-2C			K23	B-2C					

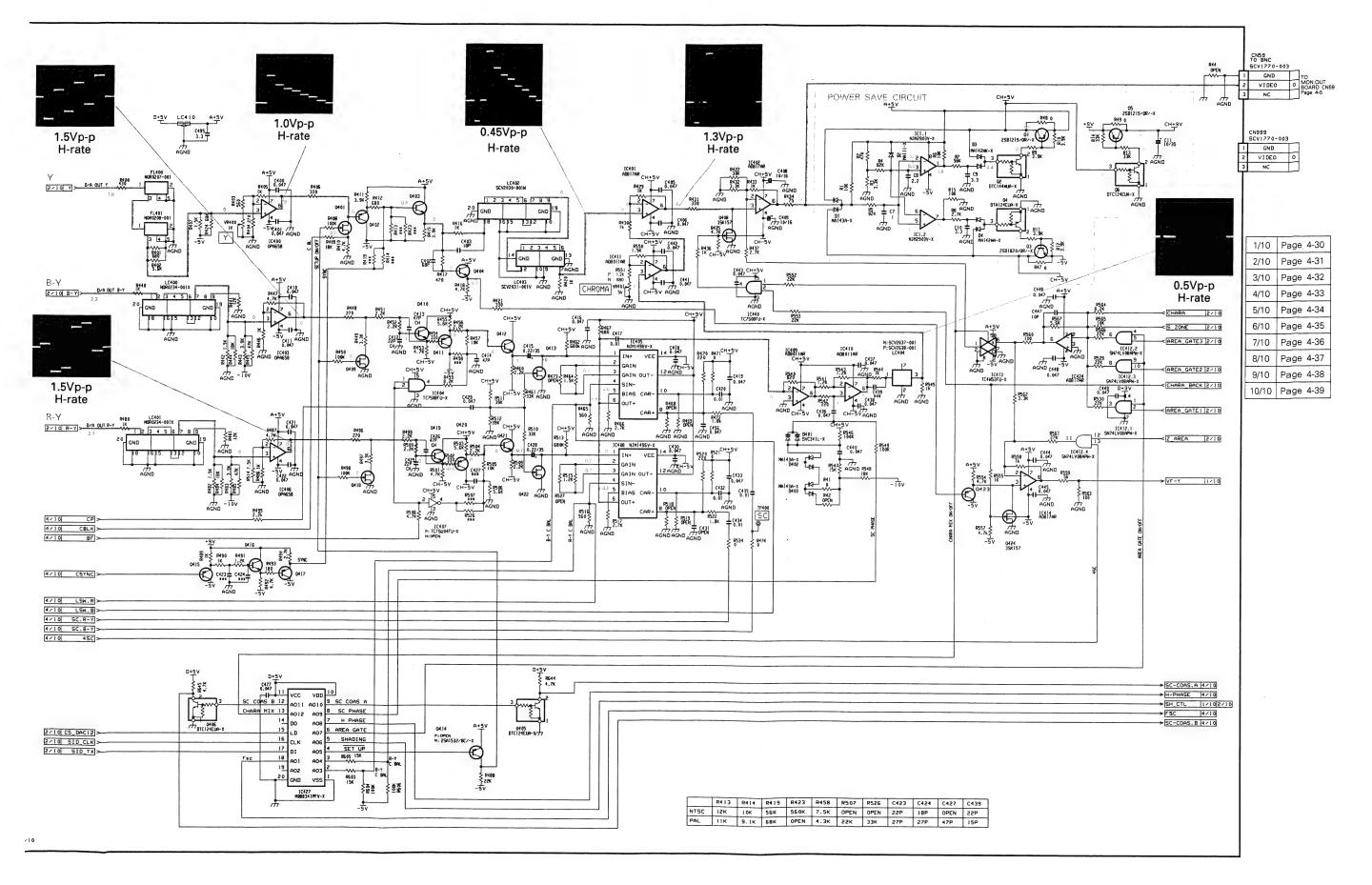
1/10 | Page 4-30 4.17 MAIN BOARD SCHEMATIC DIAGRAM 06 Page 4-31 2/10 - MAIN BOARD SCHEMATIC DIAGRAM 1/10 -3/10 Page 4-32 4/10 Page 4-33 5/10 Page 4-34 9/10 SHUF RESET : 10/10 1/2 OR 3/4 : 10/10 AUDIO2 : 6/10 Page 4-35 7/10 Page 4-36 8/10 Page 4-37 9/10 Page 4-38 10/10 Page 4-39 → BCK3 | 10/10 → MCK | 10/10 → BCK | 10/10 ← LRCK | 10/10 DO | 10/10 → | CE | 2/10 → | LRCK2 | 6/10 → | BCK2 | 6/10 R[9:0] 2/10 DFF SHADING COMPARATER 0.9Vp-p H-rate SHADING CC300 B GNDGND COMPARATER STA REDUCE G[9:0] 2/10-FROM/TO MT BOARD CN14 Page 4-68 Bch CAM/VTR 2/10 2/10 FBB: 2/10 ALT[4:0] 4/10 CLK18-2 6/10 DEDD[3:0]>

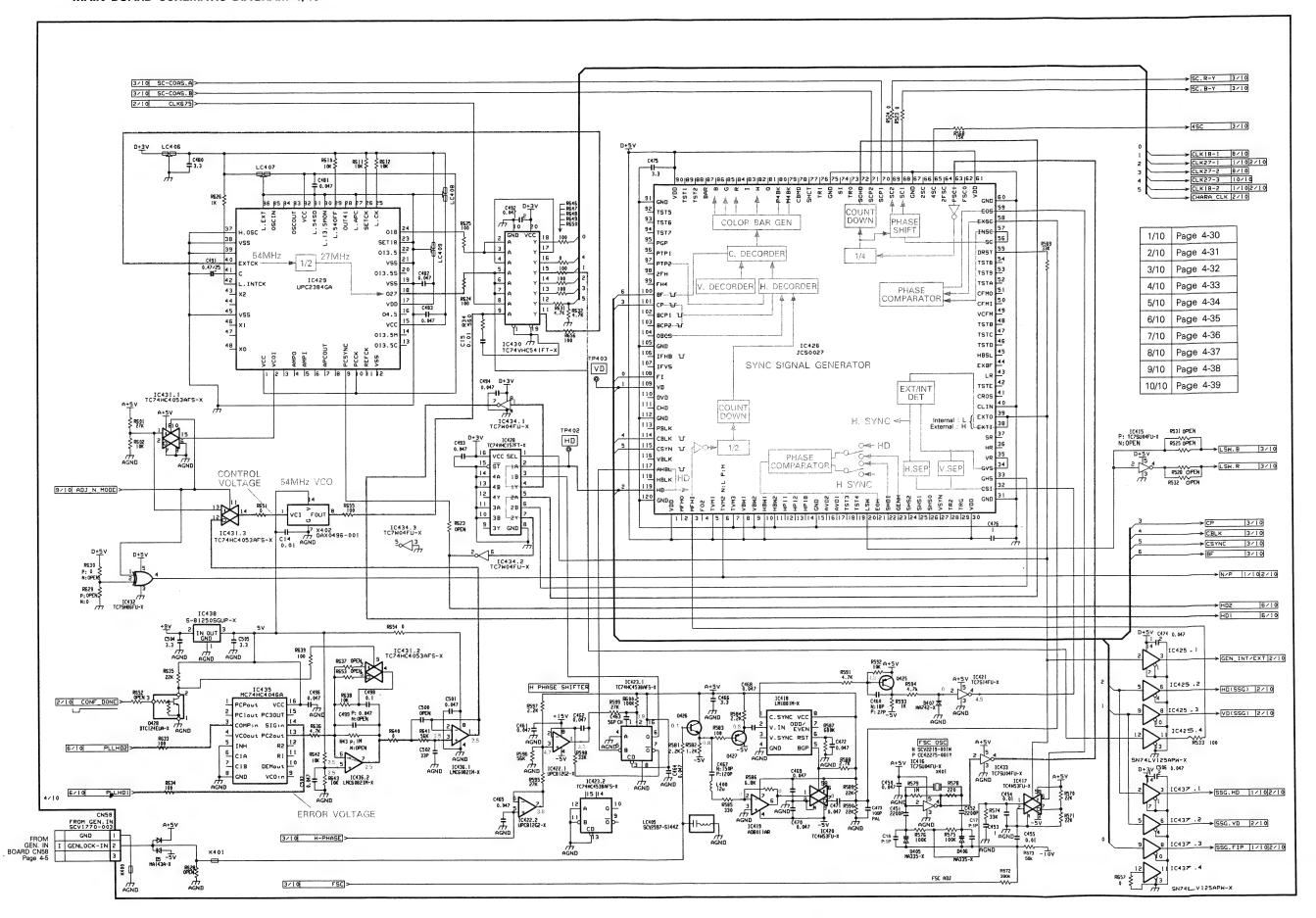
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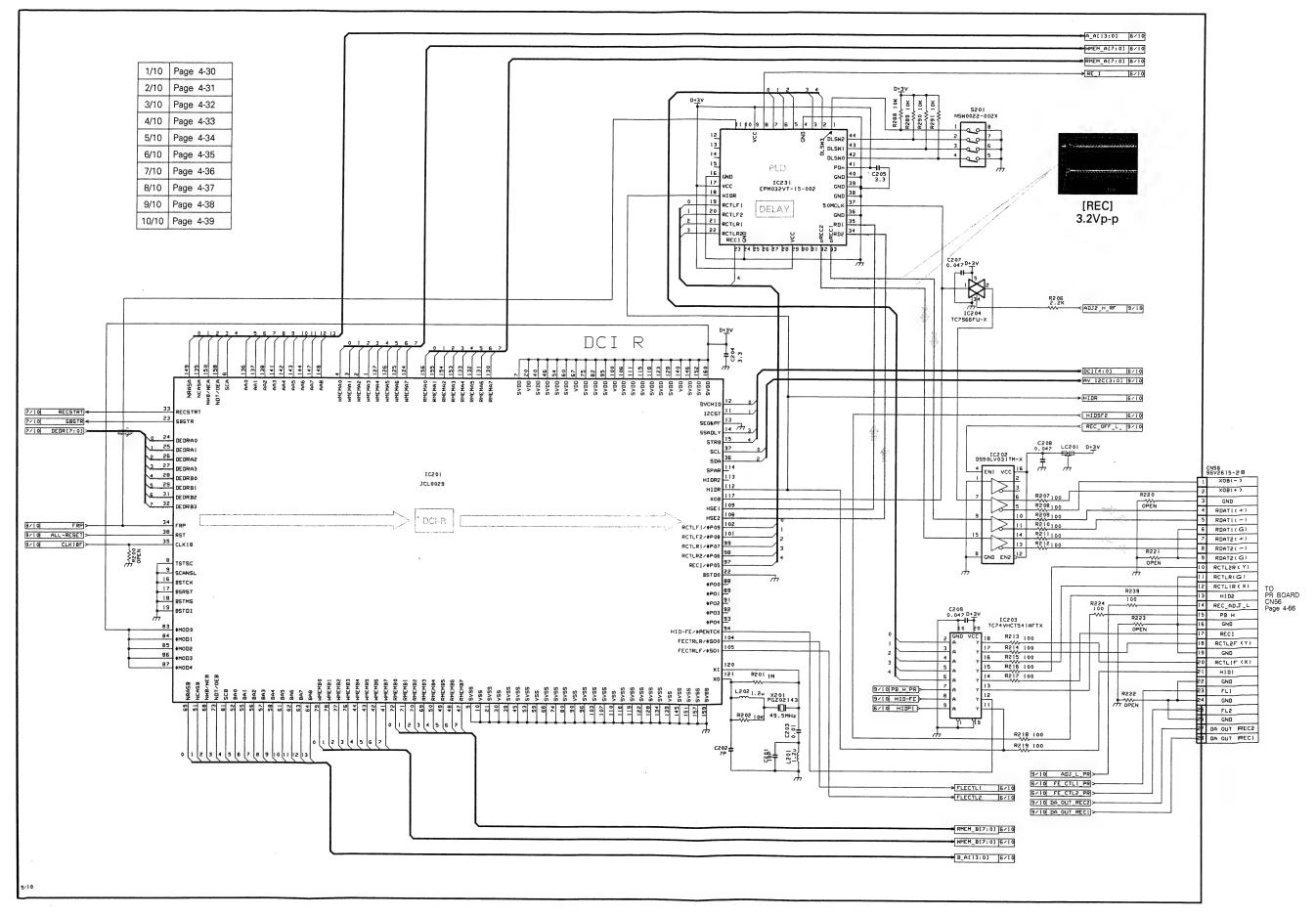
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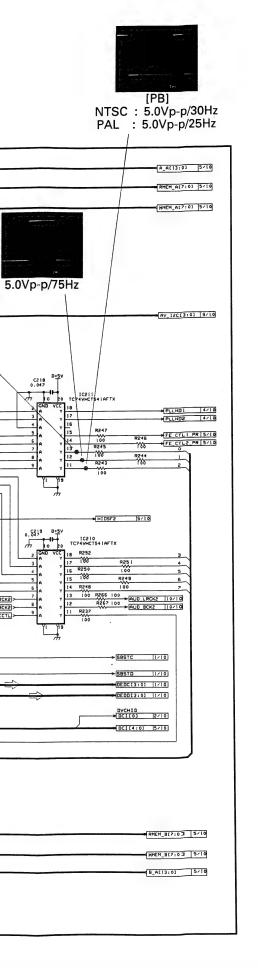
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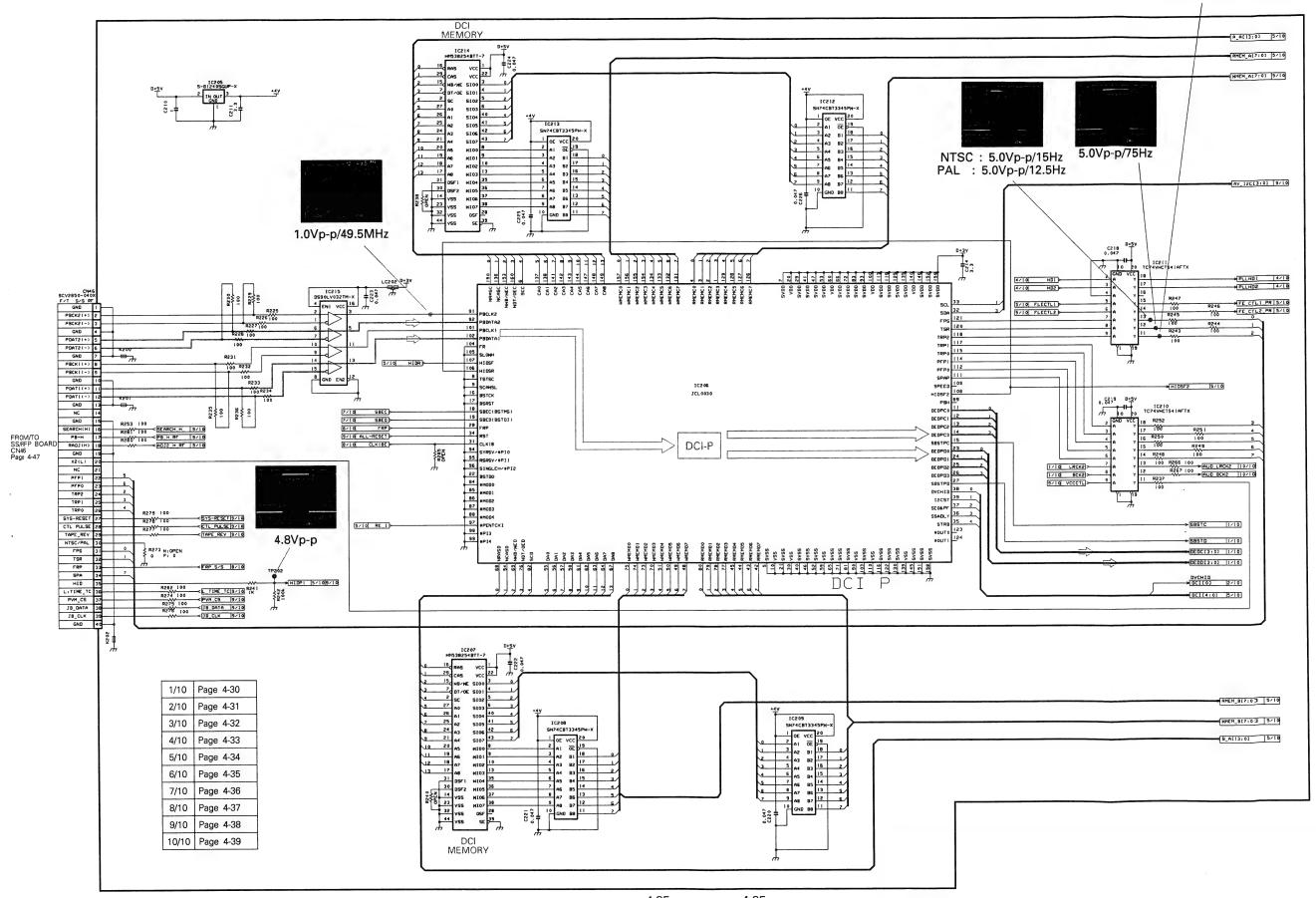


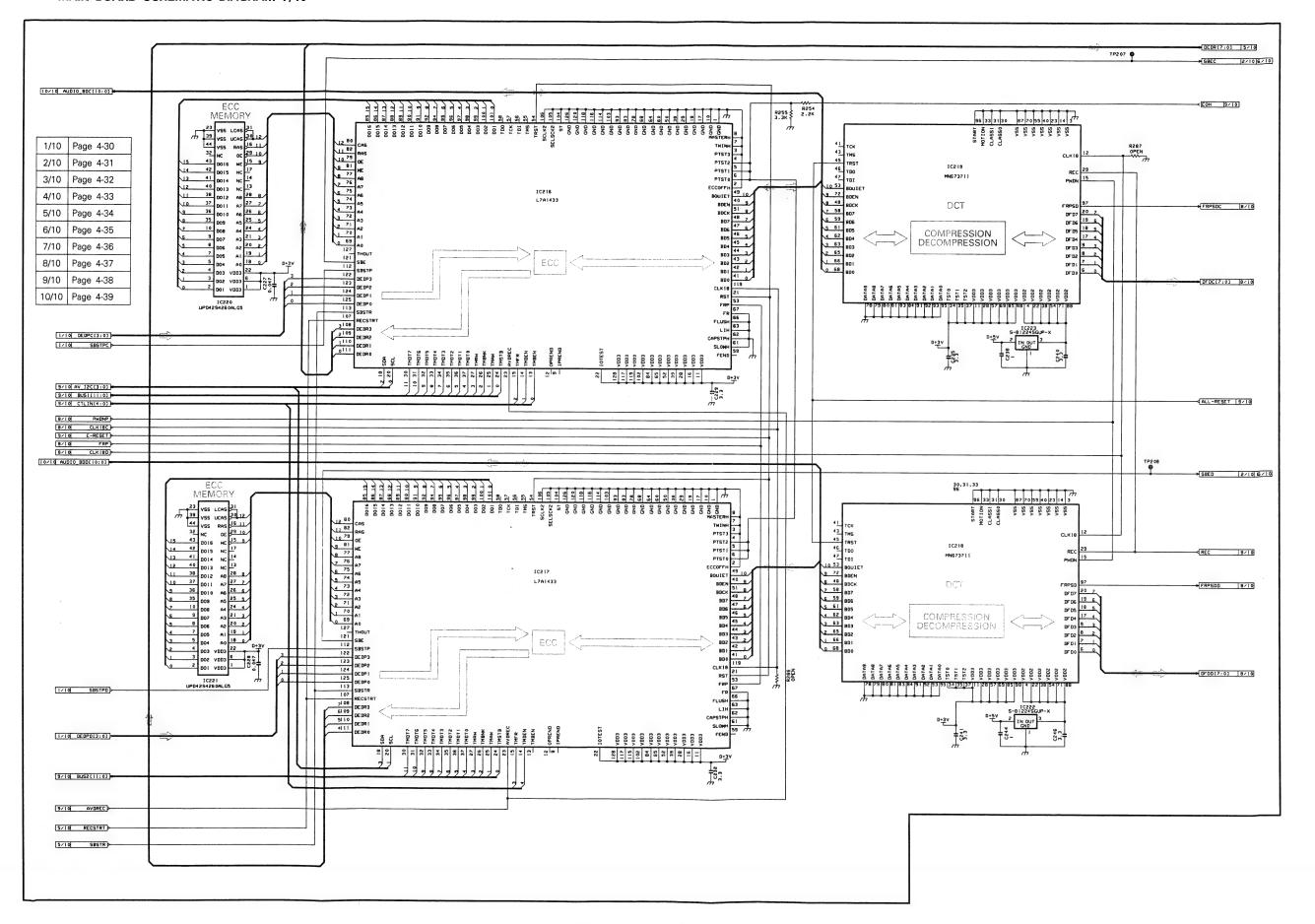


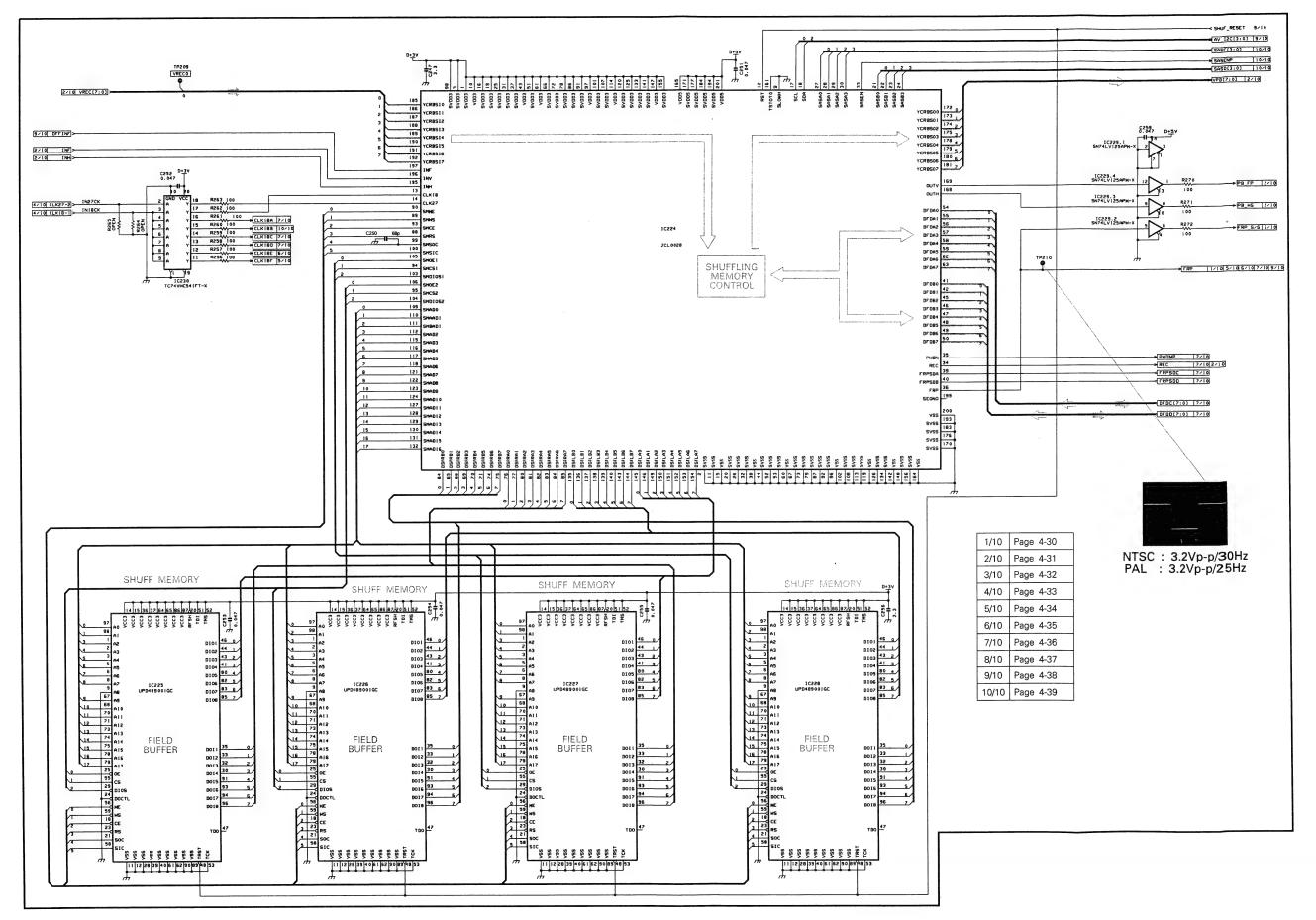


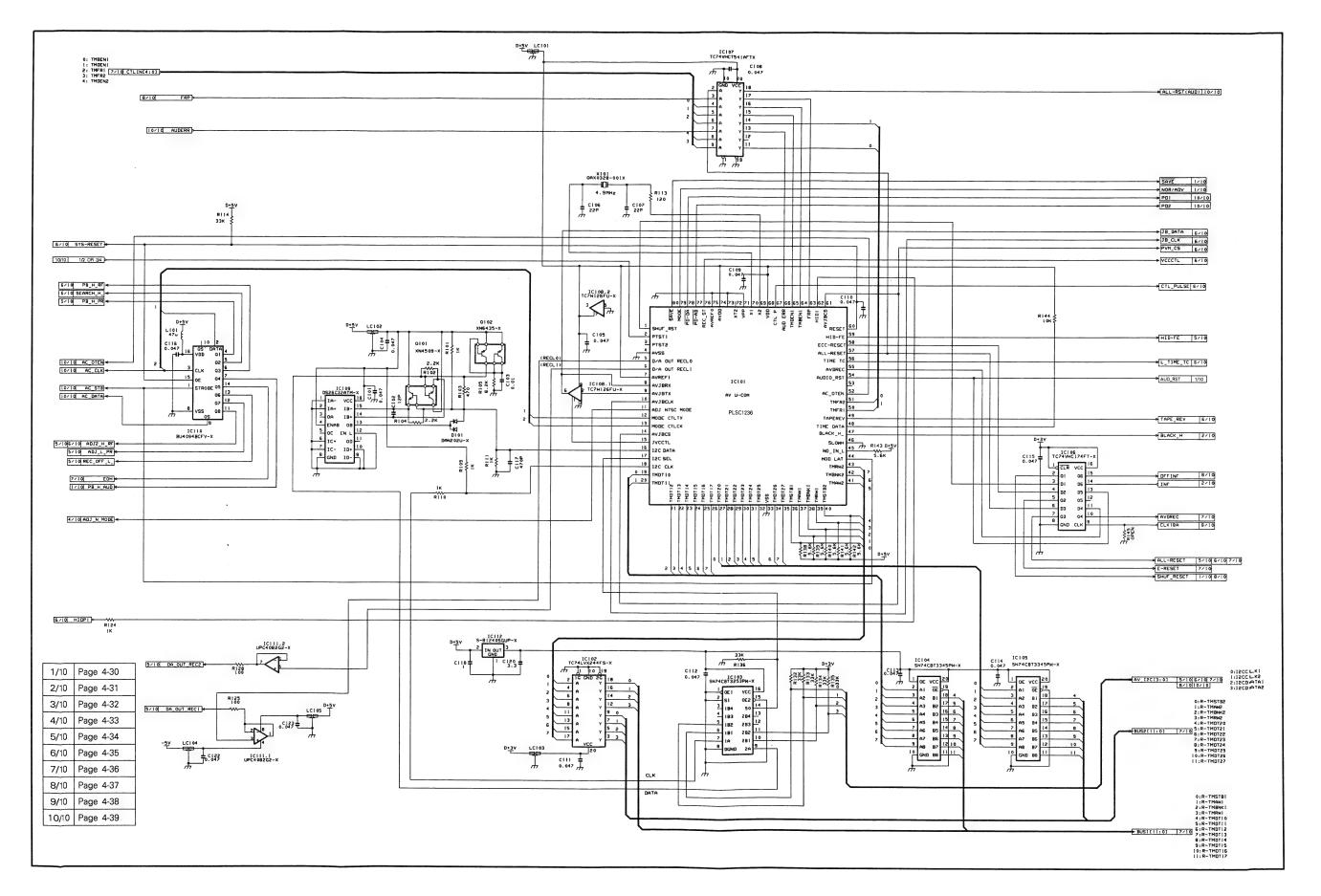


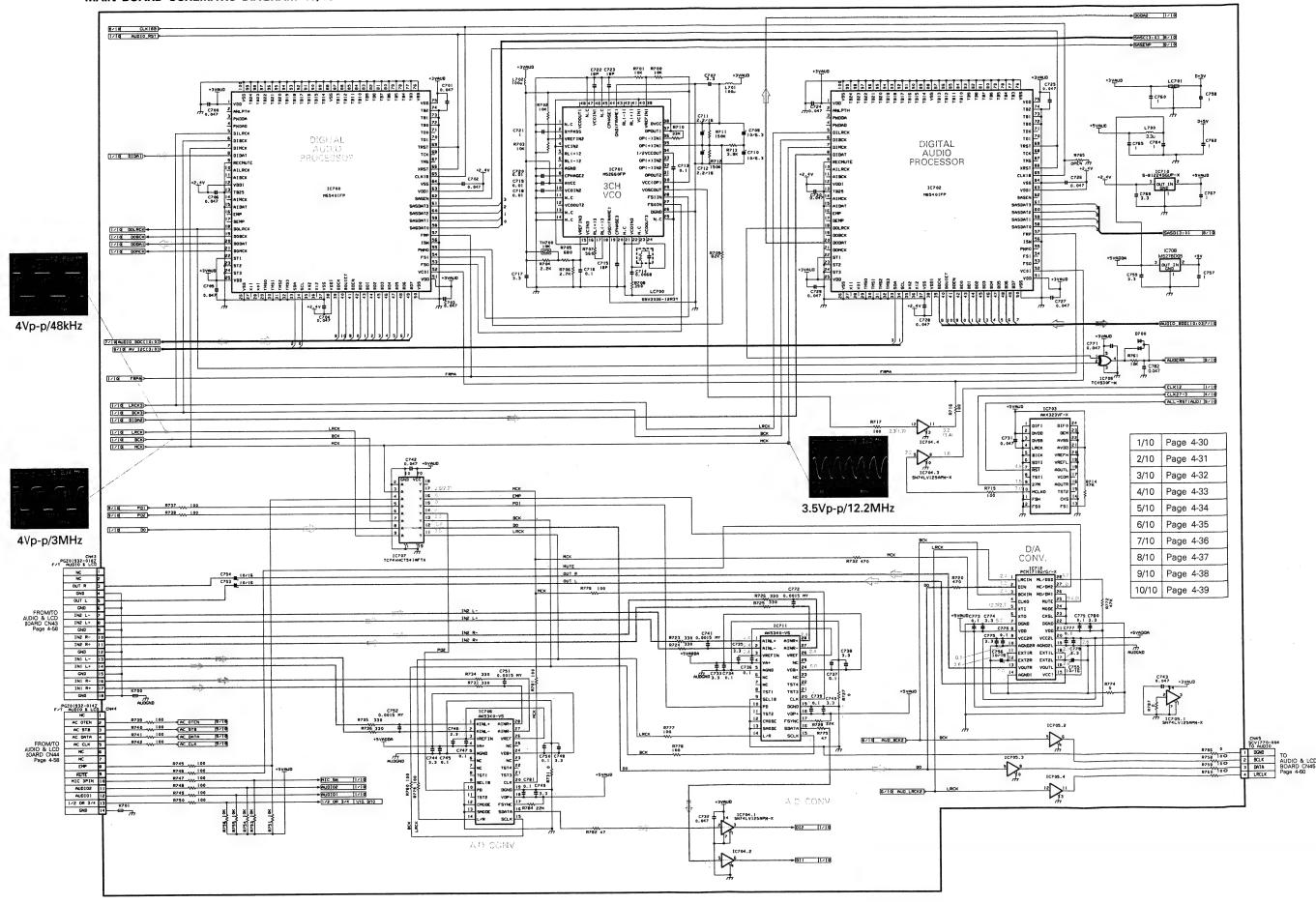


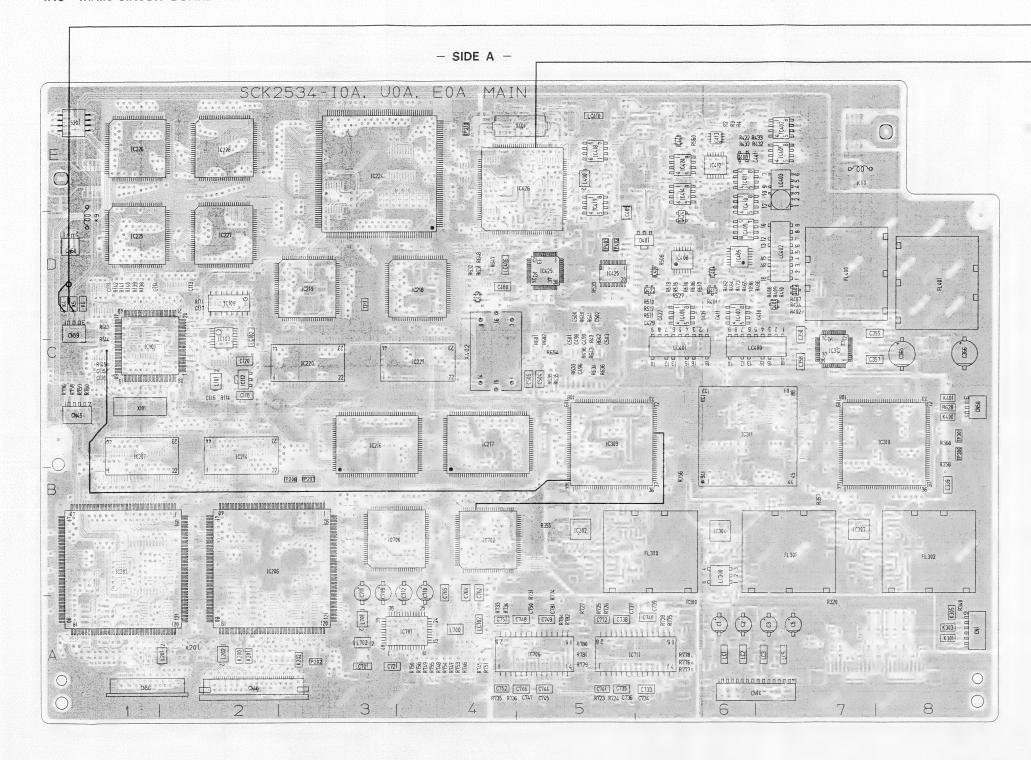












ADDRESS TABEL OF BOARD PARTS

Each address may have an address error by one interval.

A-6E A-6E B-7E
 R222
 B-2A
 R324
 B-6A

 R223
 B-1A
 R325
 B-6B

 R224
 B-1A
 R326
 B-6B

 R226
 B-2A
 R328
 B-6B

 R226
 B-2A
 R330
 B-5B

 R227
 B-2A
 R330
 B-5B

 R229
 B-2A
 R330
 B-5B

 R230
 B-2A
 R333
 B-5B

 R231
 B-2A
 R333
 B-5B

 R233
 B-2A
 R334
 B-6B

 R233
 B-2A
 R334
 B-6B

 R233
 B-2A
 R334
 B-8B

 R233
 B-2A
 R343
 B-8B

 R236
 B-2A
 R343
 B-8B

 R236
 B-2A
 R343
 B-8B

 R237
 B-2A
 R343
 B-8B

 R238
 B-2A
 R343
 B-8B

 R239
 B-1A
 R345
 B-8B

 R239
 B-1C
 R346
 B-8B

 R416
 B-7D
 R517

 R417
 B-7D
 R522

 R418
 B-7D
 R522

 R420
 B-7E
 R525

 R421
 B-7D
 R526

 R422
 B-7D
 R526

 R422
 B-7D
 R528

 R422
 B-7D
 R528

 R422
 B-7D
 R529

 R429
 B-7E
 R530

 R430
 B-7E
 R531

 R431
 B-7E
 R531

 R432
 A-6E
 R542

 R433
 B-6E
 R542

 R436
 B-6E
 R544

 R436
 B-6E
 R542

 R433
 B-6E
 R543

 R437
 A-6E
 R544

 R440
 B-7C
 R545

 R441
 B-6D
 R554

 R441
 B-6D
 R550

 R444
 B-6D
 R551

 R444
 B-6D
 R552

 R448
 B-6D
 R552

 R602 R603 R604 R605 R606 R610 R611 R612 B-5D B-5D B-4E B-4D B-4D B-5D A-8C R623 R624 R625 R626 R628 R221 B-1A R323 B-6B B629

R288 R289 R290 R291

E

(B1)

K10 _

2 III

10 1 10107 11 05

R124 C108 C107 R113 C106 C108

te Billitti

R229 R218 R218 R218 R219 R219 R221 R221

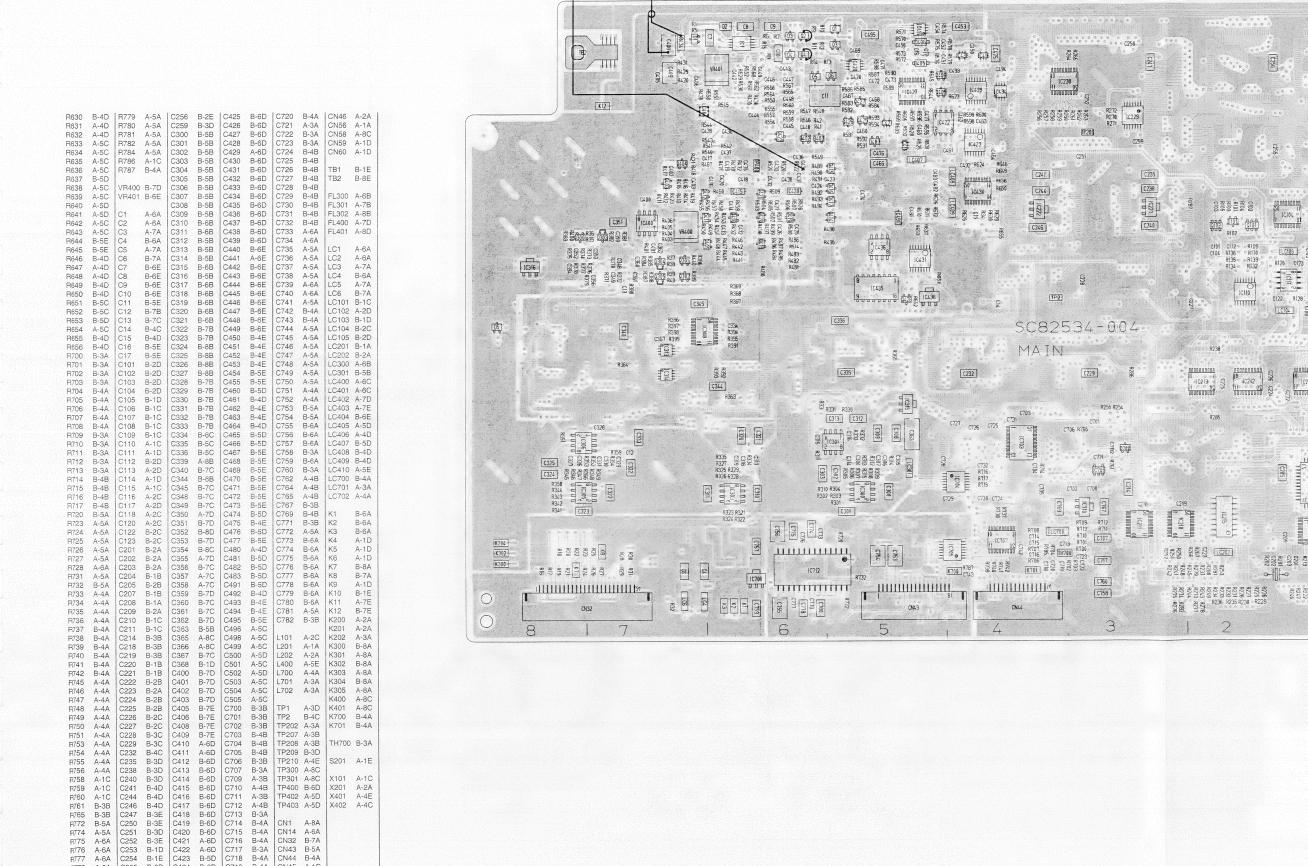
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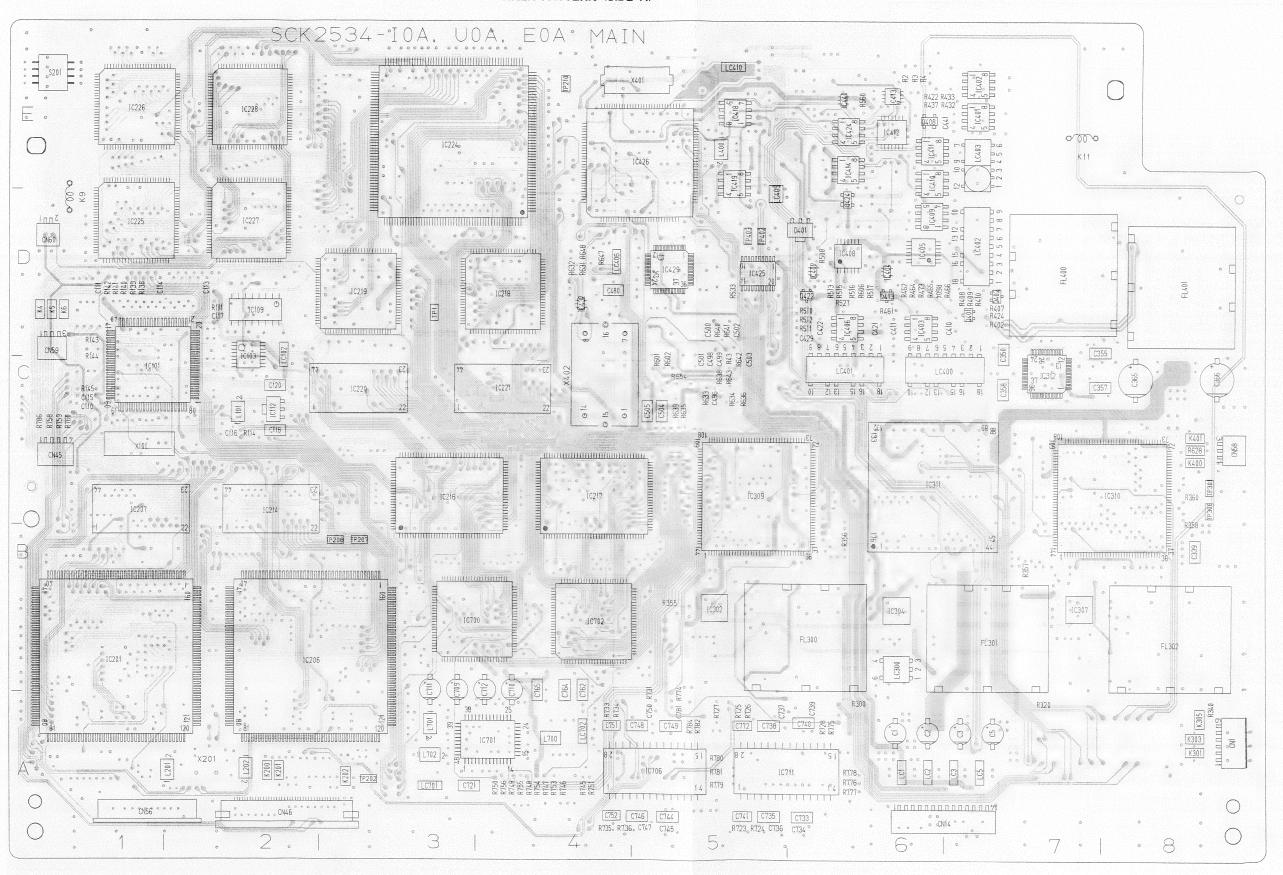
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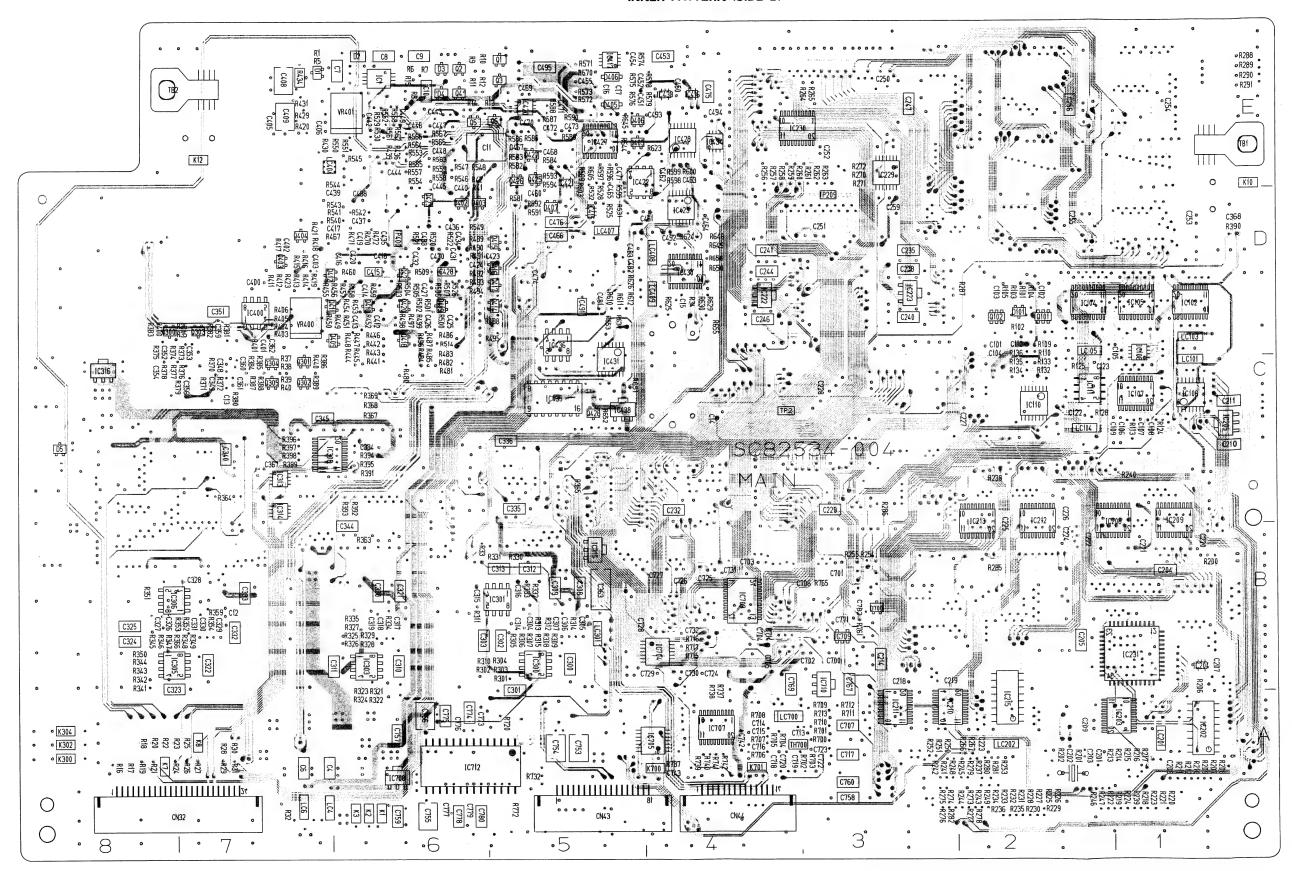
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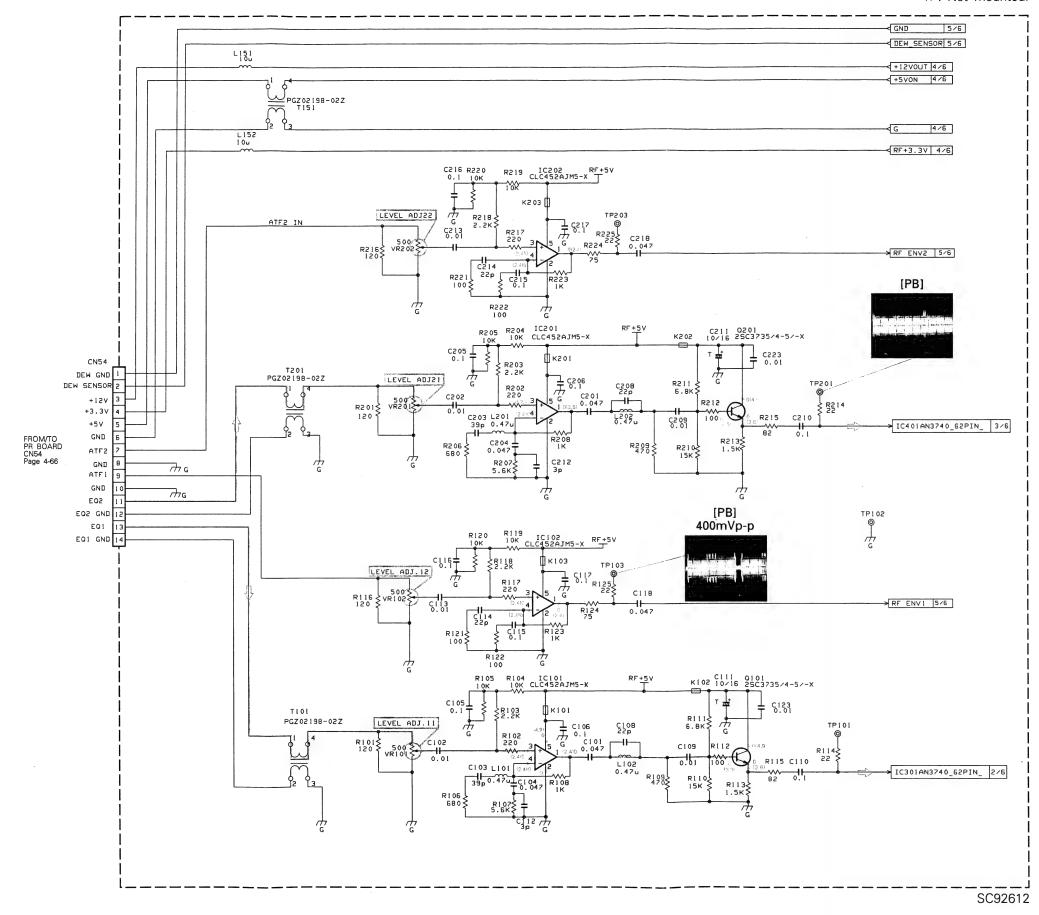


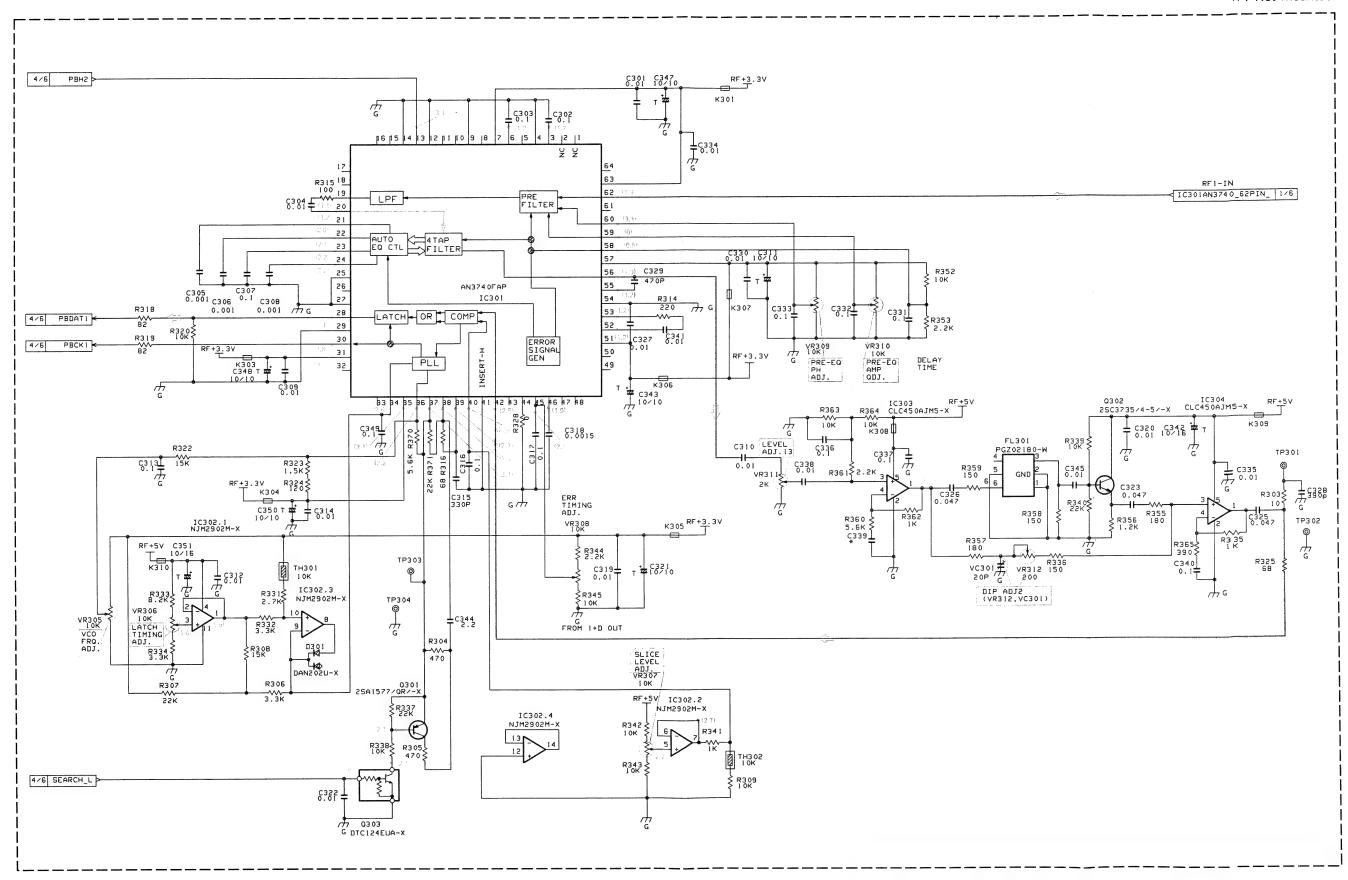
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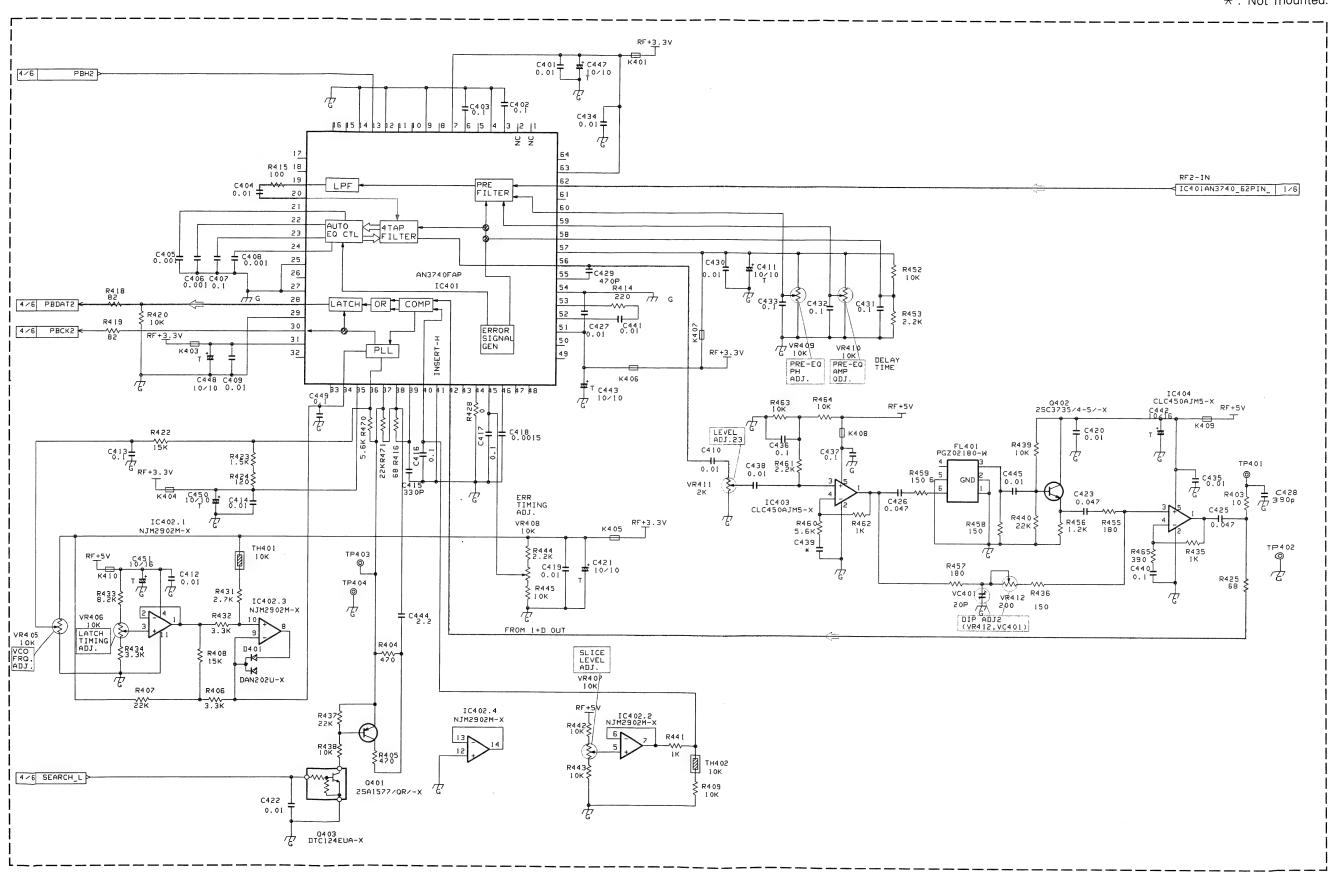
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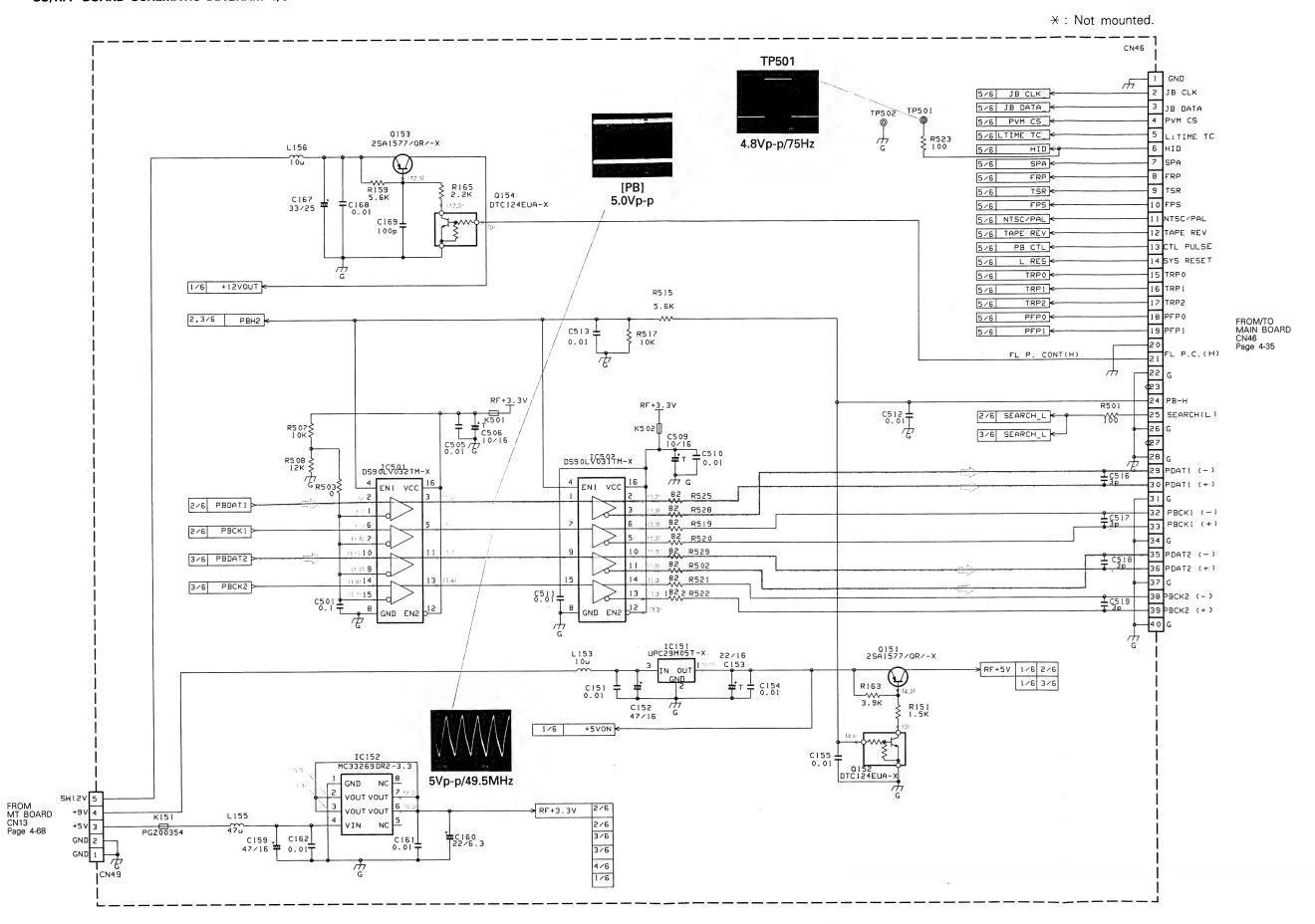


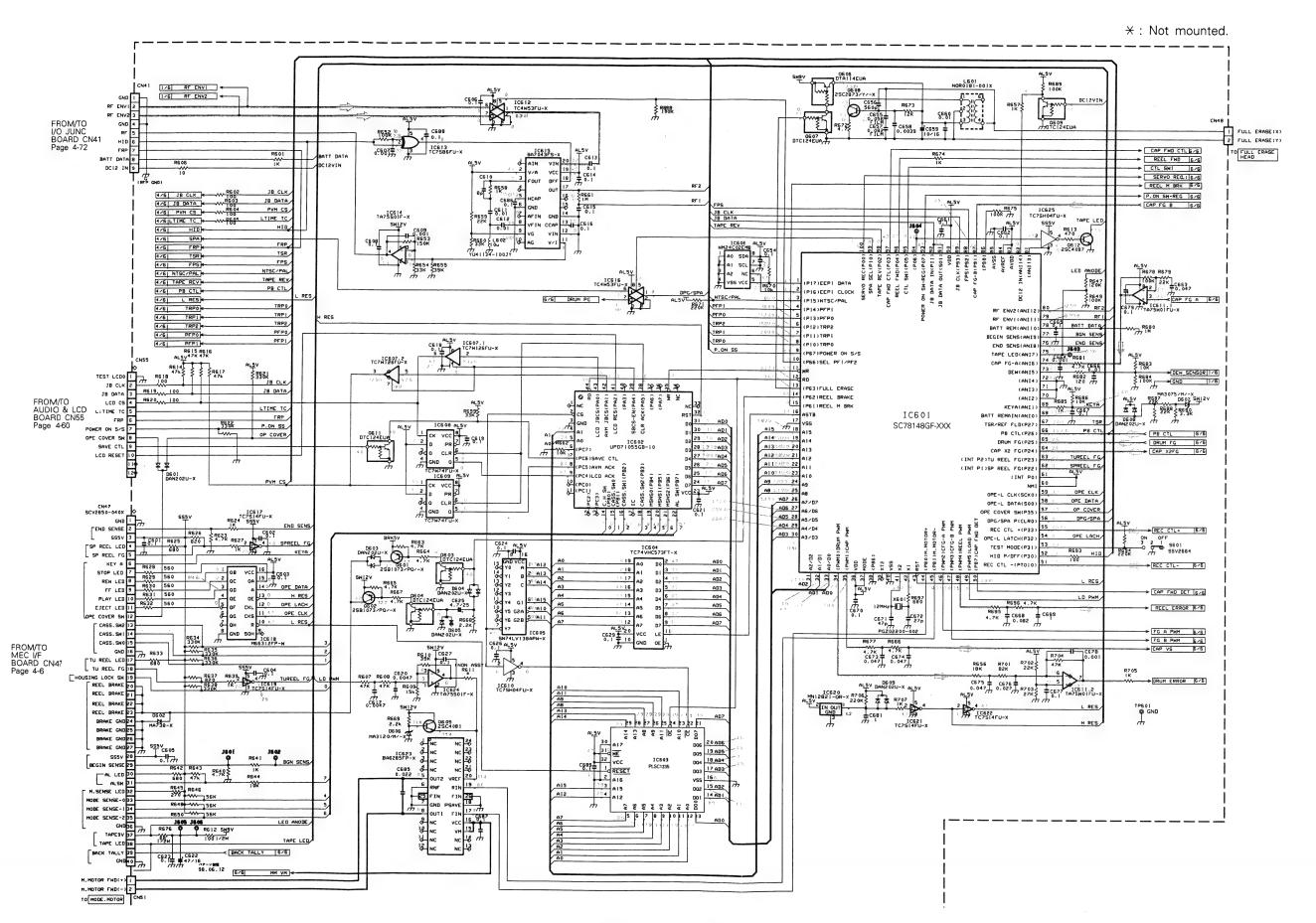


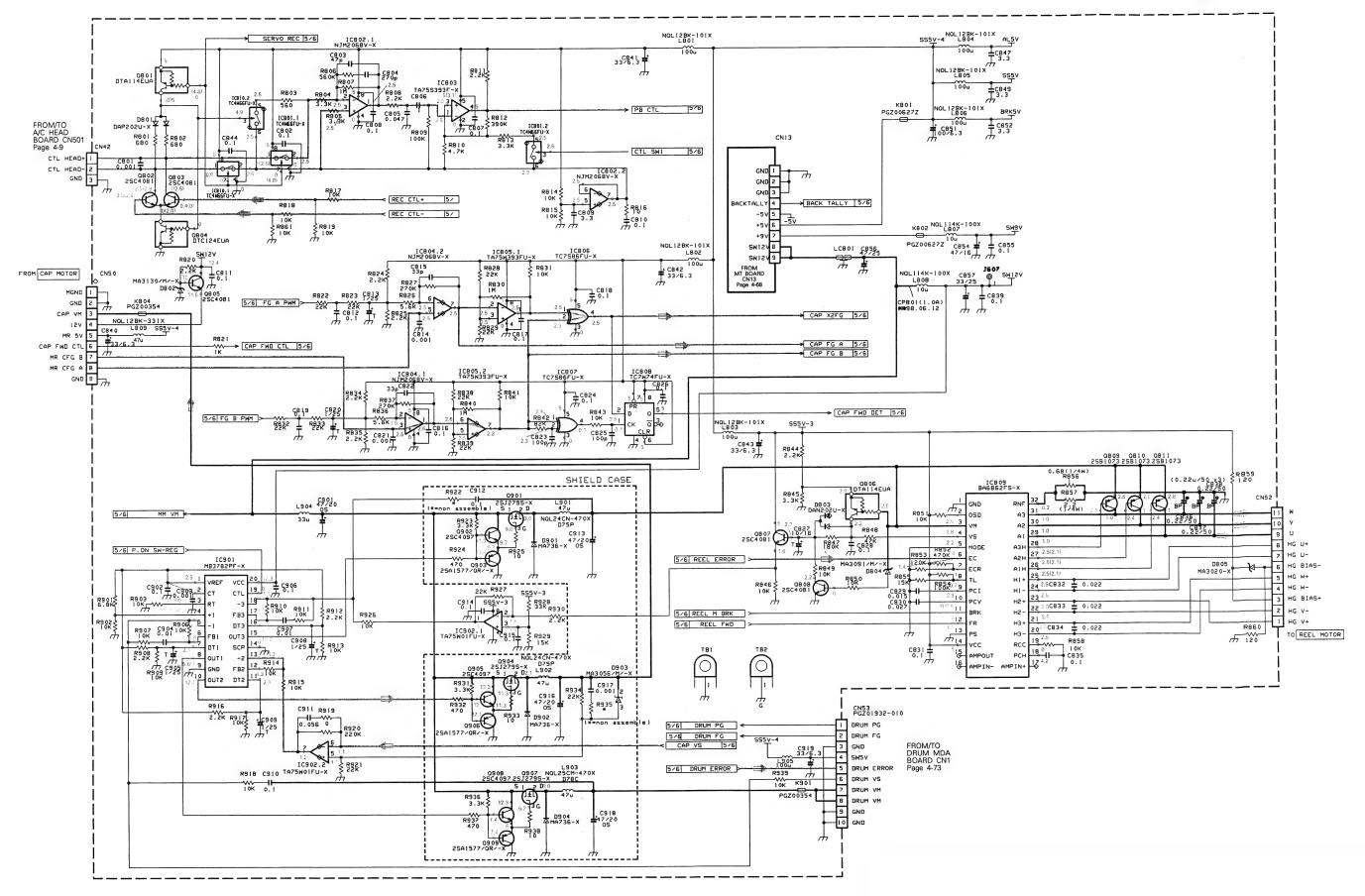


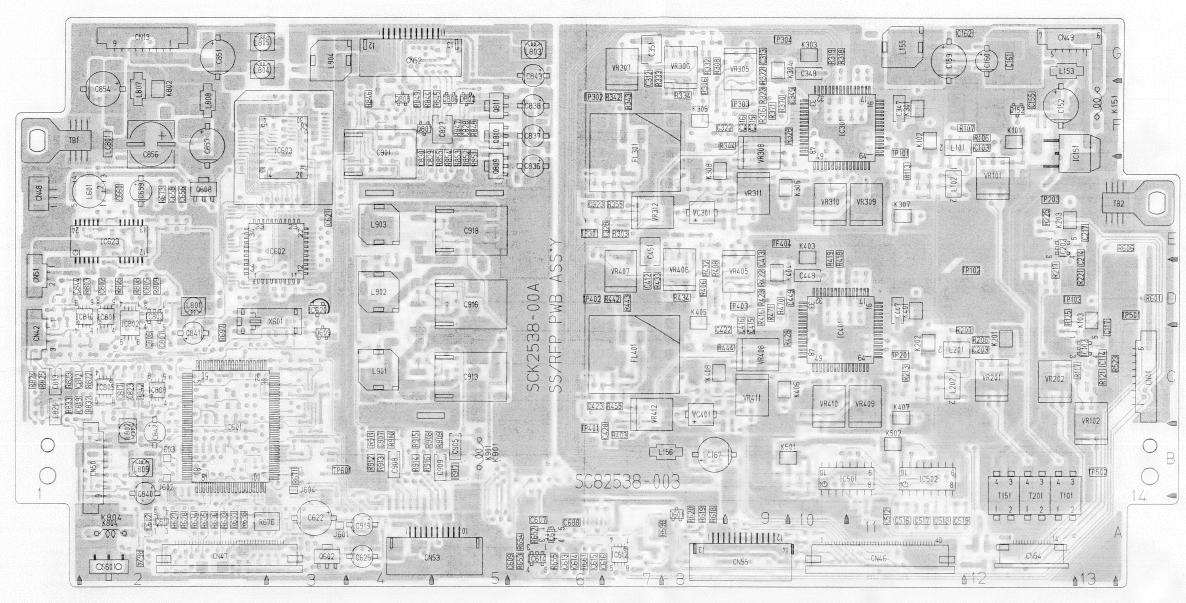










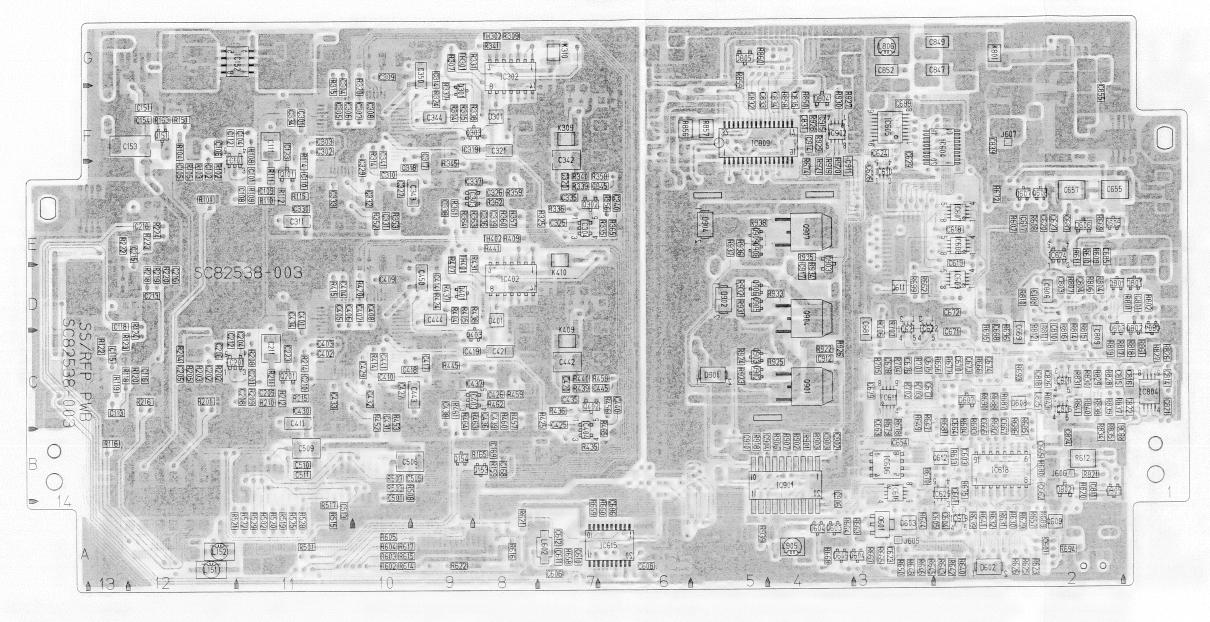


ADDRESS TABEL OF BOARD PARTS

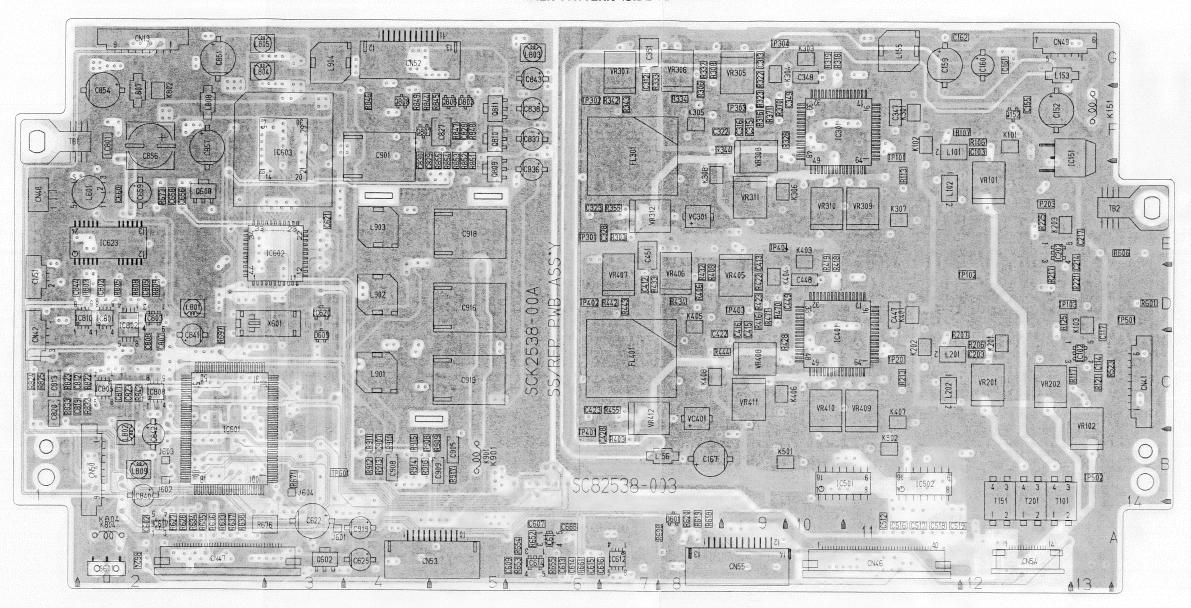
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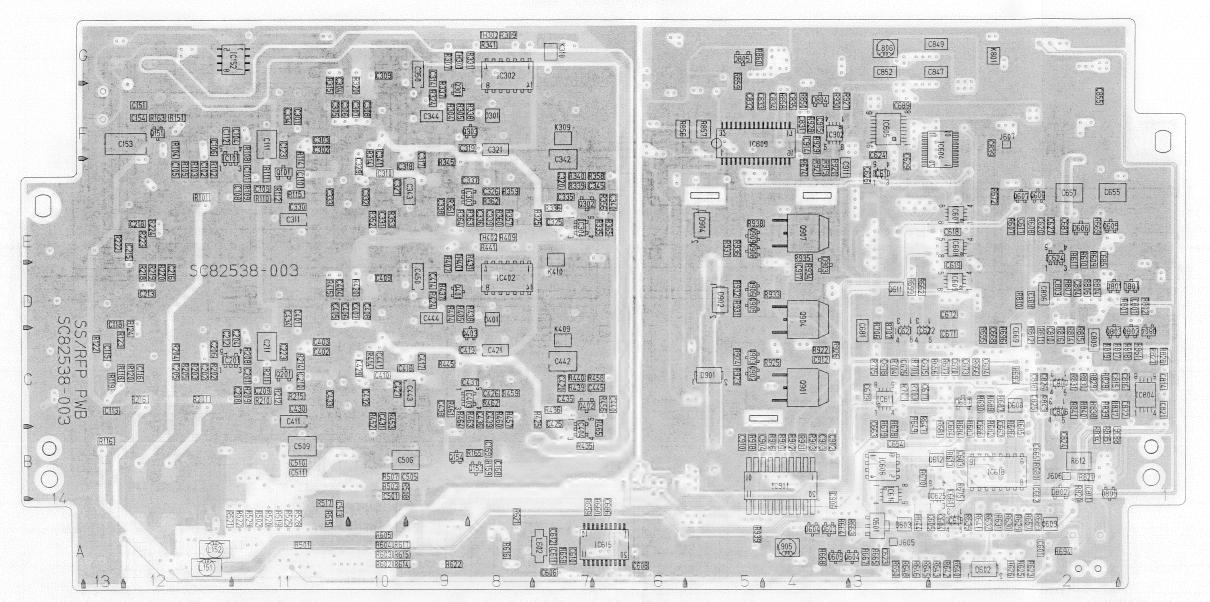
A-1C
Side Y axis

IC101 B-12F	IC611 B-5C	IC902 B-5F	Q802 B-2D	D605 B-5A	R112 B-12E	R209 B-12C	R316 A-10F	R355 A-8E	R422 A-10D	R459 B-9C	R603 B-11A	R629 B-3A	R656 B-4C	R682 B-4B	R804 B-2D	R830 B-2C	R856 B-7F
IC102 A-14C	IC612 A-8A		Q803 B-2D	D606 B-2E	R113 A-12F	R210 B-12C	R318 A-11G	R356 B-8E	R423 A-10D	R460 B-9C	R604 B-11A	R630 B-3A	R657 B-3A	R683 B-4B	R805 A-2D	R831 B-3C	R857 B-7F
IC151 A-14F	IC613 A-8A	Q101 B-12F	Q804 B-2D	D607 B-4C	R114 B-11F	R211 B-12C	R319 A-11G	R357 B-9E	R424 B-10D	R461 B-10C	R605 B-11A	R631 B-3A	R658 B-8A	R684 B-4B	R806 B-2D	R832 A-2C	R858 B-6G
IC152 B-12G	IC614 A-7A	Q151 B-13F	Q805 B-2B	D608 B-3C	R115 B-12E	R212 B-12C	R320 B-11G	R358 B-8F	R425 B-9C	R462 B-9C	R606 A-14E	R632 B-4A	R659 B-8A	R685 B-3B	R807 B-3D	R833 A-2C	R859 B-6G
IC201 B-12C	IC615 B-8A	Q152 A-13G	Q806 A-6G	D609 A-5D	R116 B-14B	R213 A-12C		R359 B-9E	R428 A-10D	R463 B-9C	R607 B-3E	R633 A-4A	R660 B-8A	R686 B-3B	R808 A-3D	R834 B-2B	R860 B-6G
IC202 A-13G	IC616 B-5B	Q153 B-9B	Q807 A-6F	D801 B-2D	R117 A-14C				R431 B-9E	R464 B-10C	R608 B-3E	R634 A-3A	R661 A-8A	R687 B-3C	R809 A-3D	R835 B-2B	R861 B-2C
IC301 A-11F	IC617 A-3A	Q154 B-10B	Q808 A-6G	D802 B-3B	R118 B-14C	R215 B-12C	R324 B-10G		R432 A-9D	R465 B-8B	R609 B-2E	R635 A-4A	R662 B-4D	R688 B-4C	R810 B-3D	R836 B-2B	R901 B-6B
IC302 B-9G	IC618 B-4B	Q201 B-12C	Q809 A-7F	D803 A-7G	R119 B-14C	R216 B-13C		R362 B-9E	R433 A-9D	R470 A-10D	R610 B-2E	R636 A-4A	R663 B-5A	R689 B-3A	R811 B-3D	R837 B-2C	R902 B-6B
IC303 B-10E	IC619 B-4A	Q301 B-10G	Q810 A-7F	D804 B-6G	R120 B-13C	R217 A-13D	R328 A-10F	R363 B-9E	R434 A-9D	R471 A-10D	R611 B-3E	R637 A-4A	R664 B-5A	R690 B-4C	R812 B-3D	R838 B-2C	R903 B-6B
IC304 B-8E	IC620 A-5D	Q302 B-8E	Q811 A-7G	D805 B-6G	R121 A-14C	R218 B-13D	R331 B-9G	R364 B-10E		R501 B-11A	R612 B-2B	R638 A-4A	R665 B-5A	R693 B-3C	R813 B-3D	R839 B-2C	R906 B-6B
IC401 A-11D	IC621 B-5D	Q303 B-9F	Q901 B-6C	D901 B-7C	R122 B-14D	R219 B-13D	R332 A-9G	R365 B-8E	R436 B-9C	R502 B-12A	R613 B-4B	R639 B-4A	R666 B-4C	R694 B-3A	R814 B-3D	R840 B-2C	R907 B-6B
IC402 B-9D	IC622 B-4D	Q401 B-10D	Q902 B-6C	D902 B-7D	R123 B-14D	R220 B-13D	R333 A-9G	R370 A-10G		R503 B-10B	R614 B-10A	R640 B-4A	R667 B-5A	R695 B-4D	R815 B-2D	R841 B-3C	R908 A-6B
IC403 B-10C	IC623 A-2E	Q402 B-8C	Q903 B-6C	D903 B-5E	R124 B-13D	R221 A-14D	R334 A-9G	R371 A-10F		R507 B-10B	R615 B-10A	R641 B-4A	R668 B-5A	R696 B-3D	R816 B-3D	R842 A-3C	R909 A-6B
IC404 B-8B	IC624 B-3E	Q403 B-9D	Q904 B-6D	D904 B-7E	R125 A-13D	R222 B-14E	R335 B-8E	R403 A-8B	R439 B-8C	R508 B-10B	R616 B-9A	R642 B-4A	R669 B-2E	R697 A-4D	R817 B-2C	R843 B-3C	R910 A-6B
IC501 A-11B	IC625 B-4B	Q601 B-5A	Q905 B-6D		R151 B-13F	R223 B-13E	R336 B-9E	R404 B-10D		R515 B-11A	R617 B-10A	R643 B-4A	R670 B-4B	R698 A-9A	R818 B-2C	R844 A-6G	R911 A-5B
IC502 A-12B	IC801 A-2D	Q602 A-5A	Q906 B-6D	R101 B-13E	R159 B-9B	R224 B-13E	R337 B-10G	R405 B-10D	R441 B-9E	R517 B-11A	R618 A-9A	R644 B-4A	R671 A-5B	R699 B-4D	R819 B-2C	R845 A-6G	R912 A-5B
IC601 A-4B	IC802 A-3D	Q603 B-5A	Q907 B-6E	R102 B-13F	R163 B-13F	R225 A-13E	R338 B-9G	R406 A-9D	R442 A-8D	R519 B-12A	R619 A-9A	R645 B-4A	R672 B-4E	R701 B-4C	R820 B-2B	R846 A-5G	R913 A-6B
IC602 A-4E	IC803 A-3D	Q604 B-5A	Q908 B-6E	R103 B-13F	R165 B-9B	R303 A-8E	R339 B-8F	R407 B-10E		R520 B-12A	R620 A-9A	R646 B-4A	R673 A-3E	R702 B-5C	R821 B-2B	R847 A-6F	R914 A-6B
IC603 A-4F	IC804 B-2C	Q605 B-2E	Q909 B-6E	R104 B-13F	R201 B-13C	R304 B-10G		R408 A-9D	R444 A-10C	R521 B-12A	R621 B-9A	R647 B-4B	R674 B-6F	R703 B-4C	R822 A-2C	R848 A-7F	R915 A-6B
IC604 B-4F	IC805 A-2C	Q606 B-3E		R105 B-13F	R202 B-13C	R305 B-10G		R409 B-9E	R445 B-10C		R622 B-10A	R648 B-4A	R675 B-4B	R704 B-5C	R823 A-2C	R849 A-6G	R916 A-6B
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IC606 B-5B	IC807 B-3C	Q608 A-4E	D401 B-9D	R107 A-12F	R204 B-13C	R307 B-10G	R343 A-8G		R453 B-10C	R525 B-12A	R624 A-3A	R650 B-5A	R677 B-4C	R706 B-5D	R825 A-2C	R851 A-7F	R918 B-6B
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IC608 B-4E	IC809 B-7F	Q611 B-5D	D602 B-4A	R109 B-12E	R206 A-12D	R309 B-9G			R456 B-8C	R529 B-12A	R626 B-3A	R653 A-7A	R679 B-5B	R801 B-2D	R827 B-2C	R853 A-6F	R920 B-5F
IC609 B-4D	IC810 A-2D	Q612 B-4B	D603 B-5A	R110 B-12E		R314 B-11F	R352 B-11E			R601 A-14D	R627 A-3A	R654 A-7A	R680 B-3B	R802 B-2D	R828 B-2C	R854 A-6F	R921 B-6F
IC610 B-5F	IC901 B-6B	Q801 B-2D	D604 B-6A	R111 B-12F	R208 B-12C	1 H315 B-11G	1H353 B-10E	H420 B-11D	1 H458 B-8C	R602 B-11A	R628 A-3A	R655 A-8A	R681 B-4B	R803 A-2D	R829 B-2C	R855 A-6F	R922 B-6C

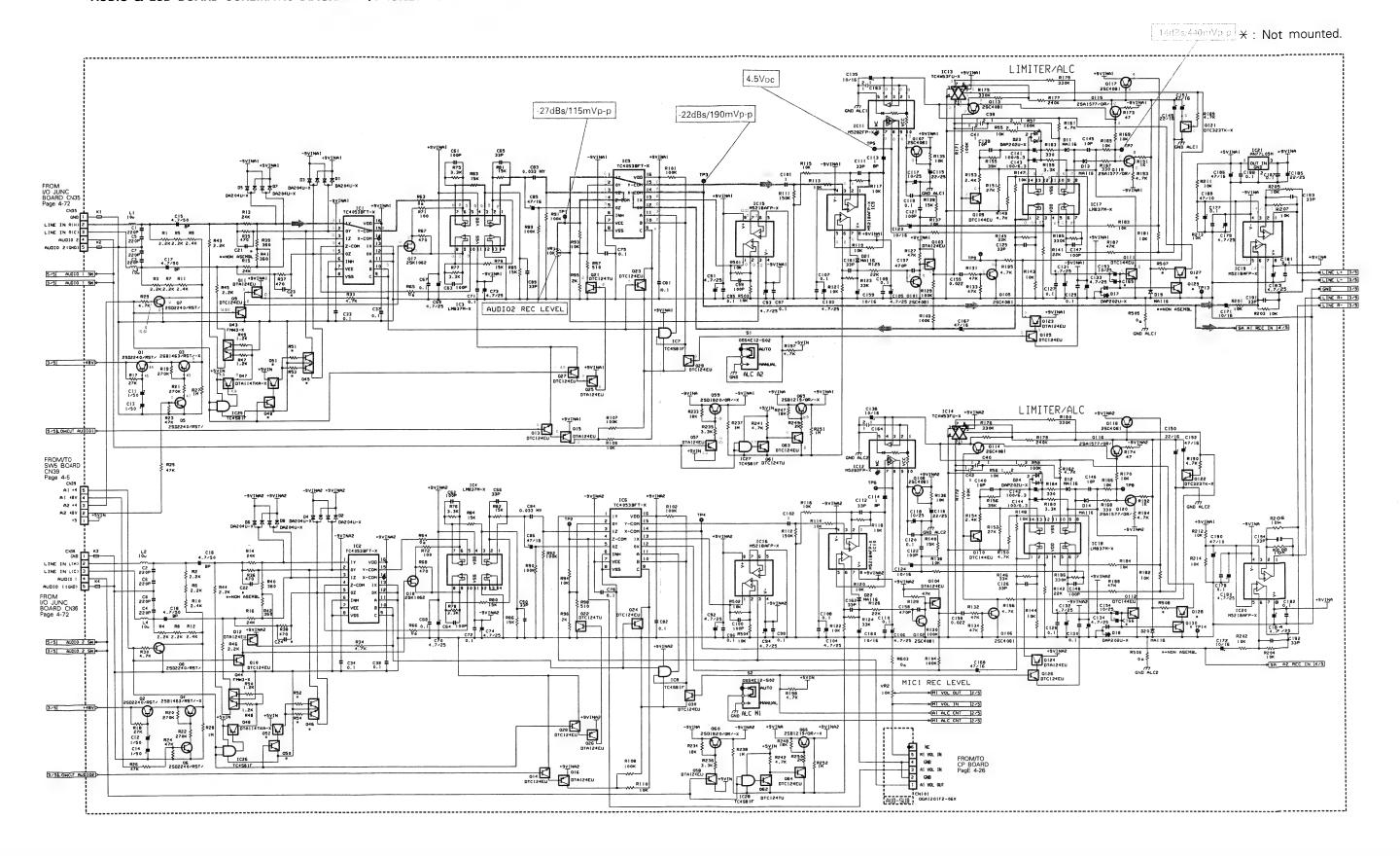


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R924 B-6C		C116 B-13C				C347		C422				C613 A				C805 A-3D	C831 B-6F	C905 A-6B	L201	A-12C		K5	01 A-10B		
	VR311 A-10E		C213 B-1		0 B-8F	C348		C423				C614 A		C665 E		C806 B-3D	C832 B-6G	C906 B-5B	L202	A-12C	K101 A-1	3F K5	02 A-11B	CN13 A-3G	1
R925 B-6C	VR312 A-9E		C214 A-1		1 B-9F	C349		C425				C615 A		C666 E		C807 A-3D	C833 B-6G	C907 A-6B	L601	A-2E	K102 A-1	2F K8	01 B-4G	CN41 A-14C	1
R926 B-5C			C214 A-1		2 A-9F			C426				C616 A		C667 E		C808 A-3D	C834 B-6G	C908 A-6B	L602	B-9A	K103 A-1	1D K8	02 A-3G	CN42 A-2D	1
R927 B-5G	VR405 A-10D		C216 B-1		3 A-8E		A-9G		B-10C			C617 B		C668 E		C809 B-2D	C835 B-6G	C909 A-6B	L801	A-3D	K151 A-1	1G K8	04 A-2A	CN46 A-11A	-
R928 B-6F	VR406 A-9D VR407 A-8D	C151 B-13G			5 B-9E	C401						C618 B		C669 E		C810 B-3D	C836 A-7F	C910 B-6B	L802	A-3B	K201 A-1	3D K9	01 A-7B	CN47 A-4A	1
R929 B-6F			C217 A-1		6 B-9E	C402						C619 B		C670 E		C811 B-2B	C837 A-7F	C911 B-5F	L803	A-7G	K202 A-1	2D		CN48 A-2E	1
R930 B-5G	VR408 A-10C		C218 B-1		7 B-10F	C403				District Control of the Control		C620 B			B-4D	C812 A-2C	C838 A-7G	C912 B-6C	L804	A-4G	K203 A-1	3E S6	01 A-2A	CN49 A-13G	
R931 B-6D			C301 B-1		28 A-8E	C404						C621 A		C672 E		C813 A-2C	C839 B-4F	C913 A-7C	L805	A-4G	K301 A-1	2G		CN50 A-2B	
R932 B-6D	VR410 A-11C		C301 B-1		9 B-11F	C405			B-11C			C622 A		C673 E		C814 B-2C	C840 A-3B	C914 B-6F	L806	B-5G	K303 A-1	OG T1	01 A-13B	CN51 A-2D	
R933 B-6D	VR411 A-10C		C302 B-1	STREET, STREET	30 B-12E	C406						C623 B		C674 E		C815 B-2C	C841 A-3D	C915 B-6F	L807	A-3G	K304 A-1	OG T1	51 A-13B	CN52 A-6G	
R934 B-6D	VH412 A-90		C303 B-1			C407						C624 B		C675 E		C816 B-2C	C842 A-3B	C916 A-7D	L808	A-4G	K305 A-9	F T2	01 A-13B	CN53 A-6A	
R935 B-6E	C101 B-12F		C304 B-1									C625 A		C676 E		C817 A-3C	C843 A-7G	C917 B-6D	L809	A-3B	K306 A-1	OF		CN54 A-13A	I
R936 B-6E			C306 B-1			C409		C436			A-12A	C626 B		C677 E		C818 B-3C	C844 A-2D	C918 A-7E	L901		K307 A-1	2E FL	301 A-8F	CN55 A-10A	
R937 B-7E	C102 B-13F	C167 A-9B	C306 B-1			C410		C437			B-3A			C678 E		C819 A-2C	C847 B-4G	C919 A-5A	L902		K308 A-9	F FL	401 A-8C		
R938 B-6E	C103 A-12F		C307 B-1				B-12C		B-10C	C602				C679 E		C820 A-2C	C849 B-4G		L903		K309 B-8	F			
R939 B-6A	C104 B-12F	C169 B-9B				C411		C439		C603		Control of Control of Control		C681 E		C821 B-2C	C851 A-4G	VC301 A-9E		A-5G	K310 B-9		I301 B-10G		
	C105 B-13F		C309 B-1		37 B-9F	C412		C440		C604		C655 E		C685 E		C822 B-2C	C852 B-5G	VC401 A-9C	L905		K401 A-1		1302 B-9G		
VR101 A-13F	C106 B-13F	C202 B-13C			38 B-10E				B-11C	C605				C686 E		C823 A-3C	C854 A-2G				K403 A-1		1401 B-10E		
VR102 A-14B	C108 B-12E	C203 A-12C			39 B-9E			C442		C606				C687 E		C824 B-3B	C855 B-2G	L101 A-12F	J601	A-5A	K404 A-1	OD TH	1402 B-9E		
	C109 B-12F	C204 B-12D			10 B-8E	C416			B-10C		A-7A			C688 A		C825 B-3C	C856 A-3F	L102 A-12F	J602		K405 A-9	D			1
VR202 A-13C		C205 B-13C			11 B-11F			C444		C608				C689 E		C826 B-3C	C857 A-4F	L151 B-13A		A-3B	K406 A-1		1 A-2F		
VR305 A-10G		C206 B-13C			12 B-8F			C444		C609					B-2D	C827 A-6F	C901 A-6F	L152 B-13A		A-5B	K407 A-1		32 A-15E		1
VR306 A-9G	C112 B-12F	C208 B-12C		ASSESSED RESIDENCE					A-12D	C610				C802 /		C828 A-7F	C902 B-5B	L153 A-13G		B-5A	K408 A-9				I
VR307 A-8G		C209 B-12C			43 B-10E	C419			A-12D A-10D	The state of the s		Control of the Contro		C803 F		C829 A-6F	C903 B-5B	L155 A-12G	No recipit Profession (1)	B-3B	K409 B-8		01 A-4D		1
VR308 A-10F	10114 A-140	C210 B-11C	1031/ B-1	UF US	44 B-10F	10420	D-00	10440	V-10D	10011	DUM	LOUGE F	, OD	0000		1 0000 11 01	,								



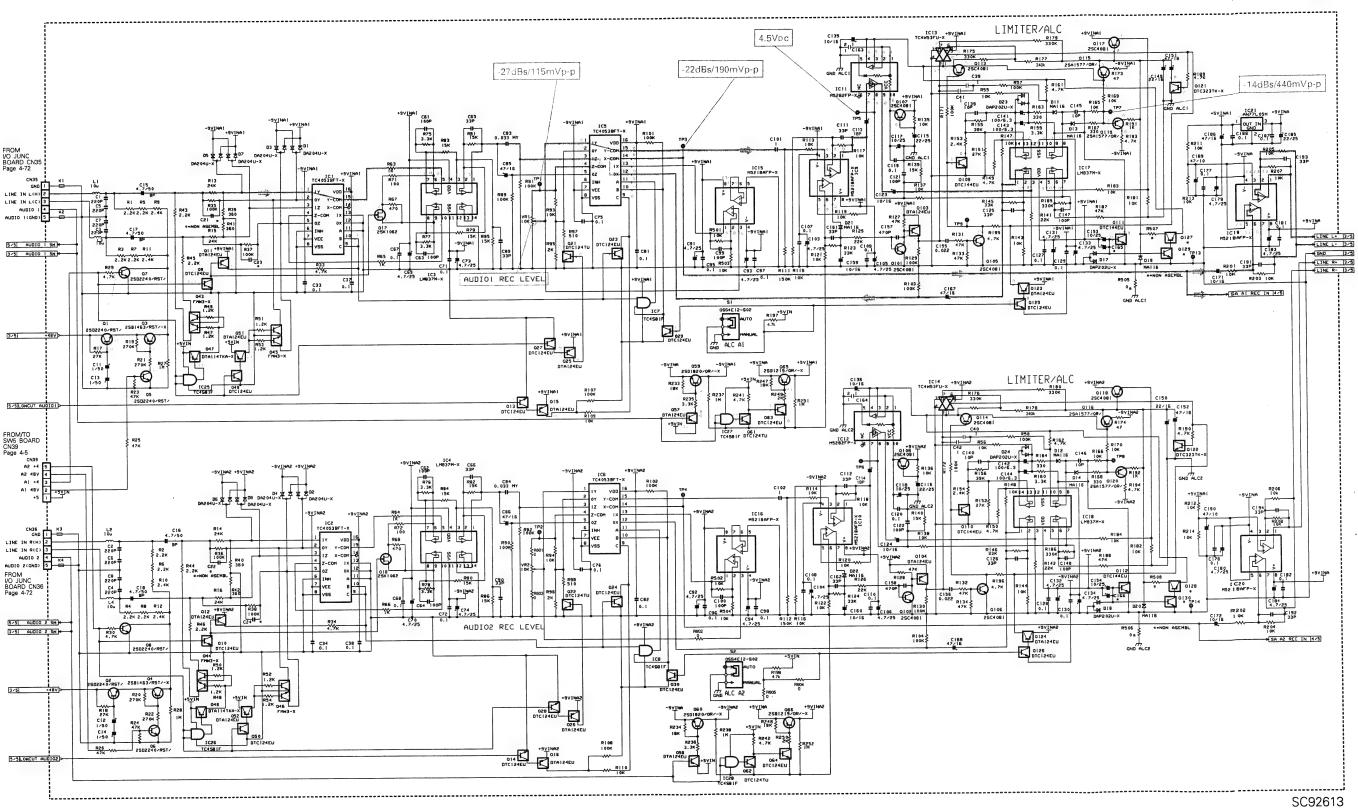


- AUDIO & LCD BOARD SCHEMATIC DIAGRAM 1/5 (ONLY FOR DY-90U) -

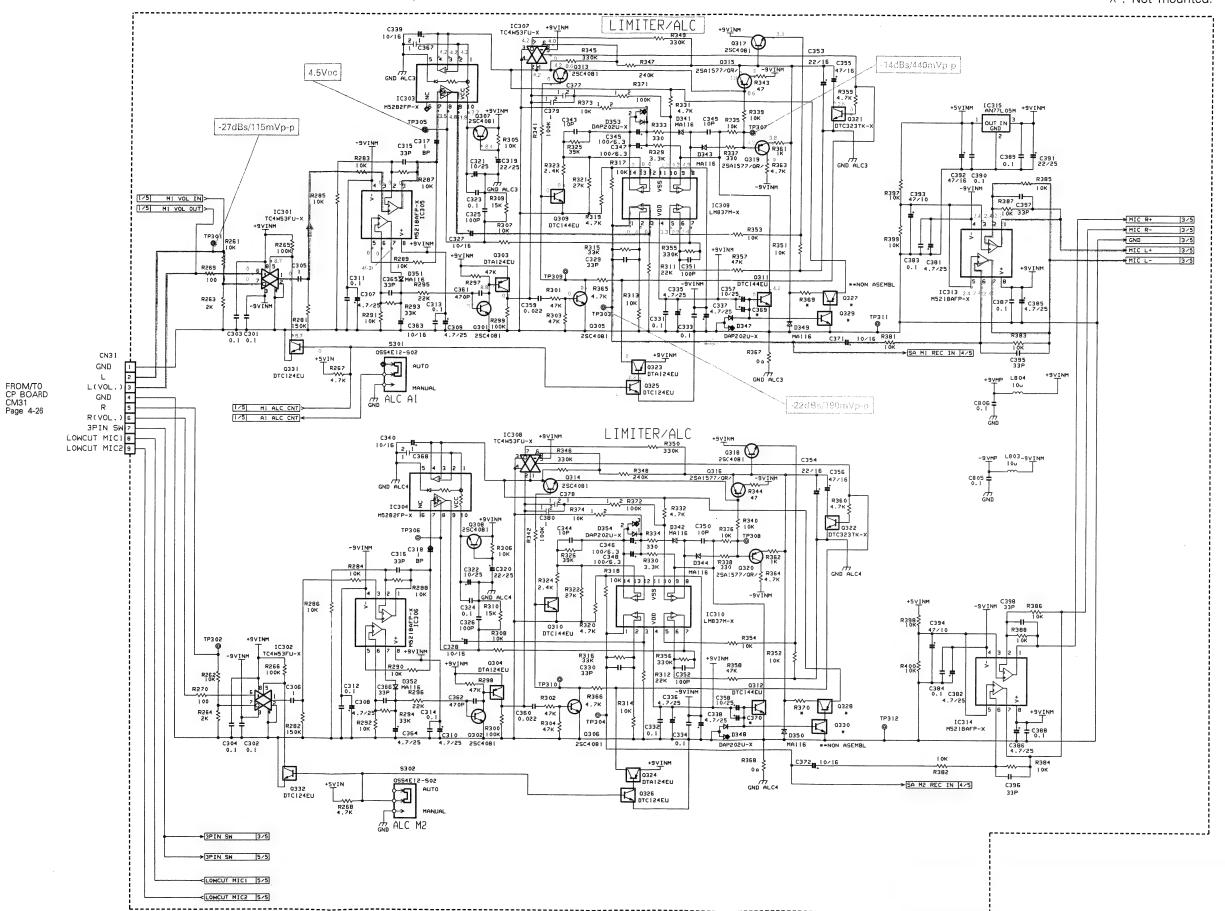


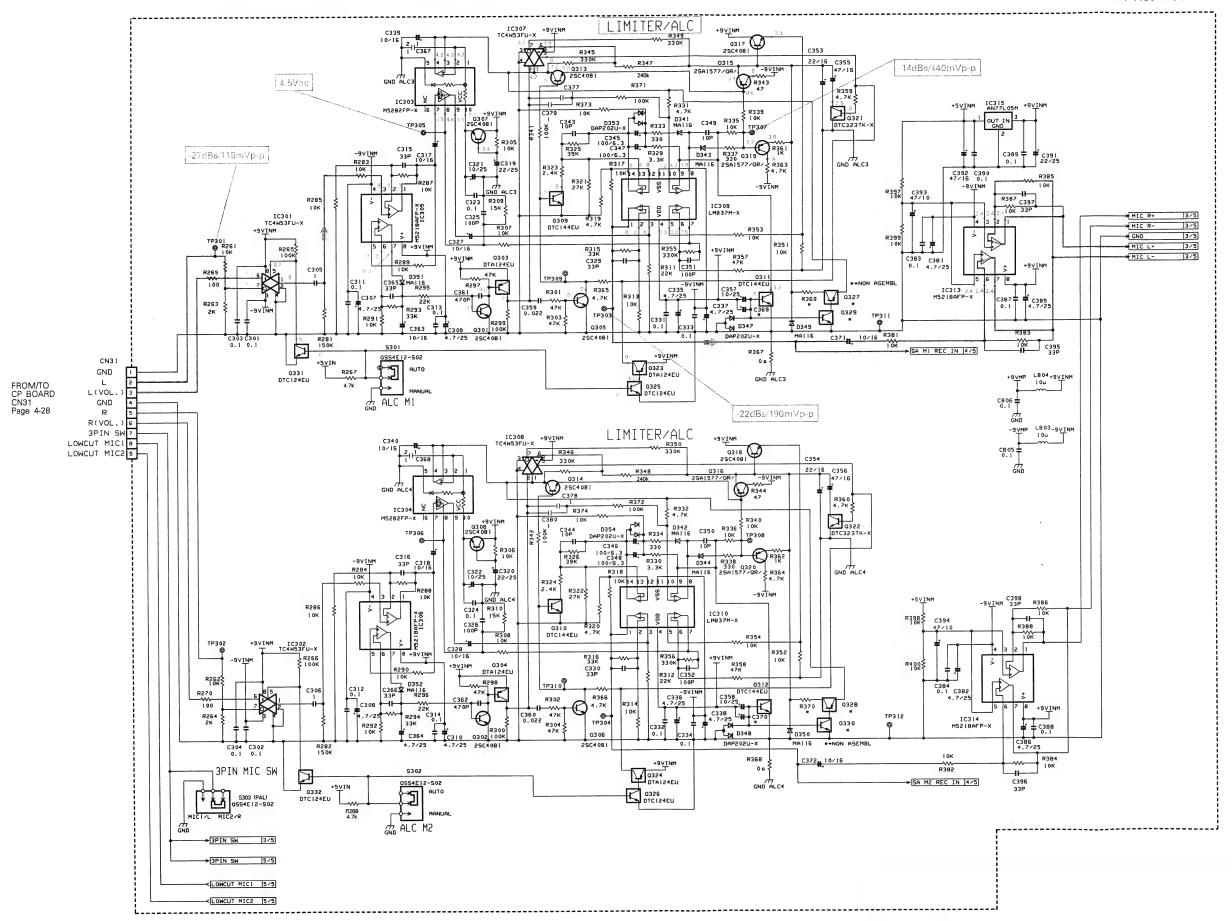
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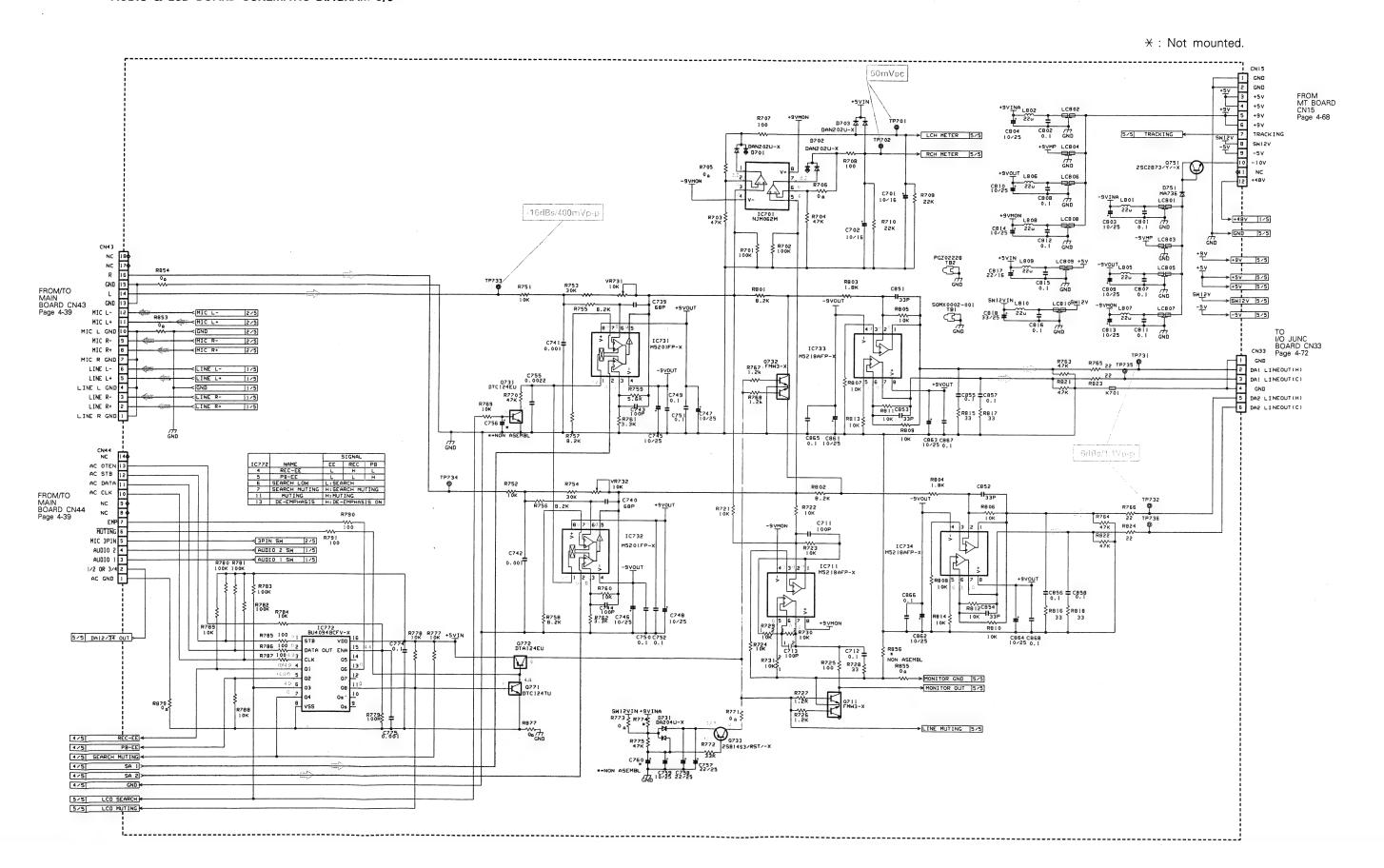
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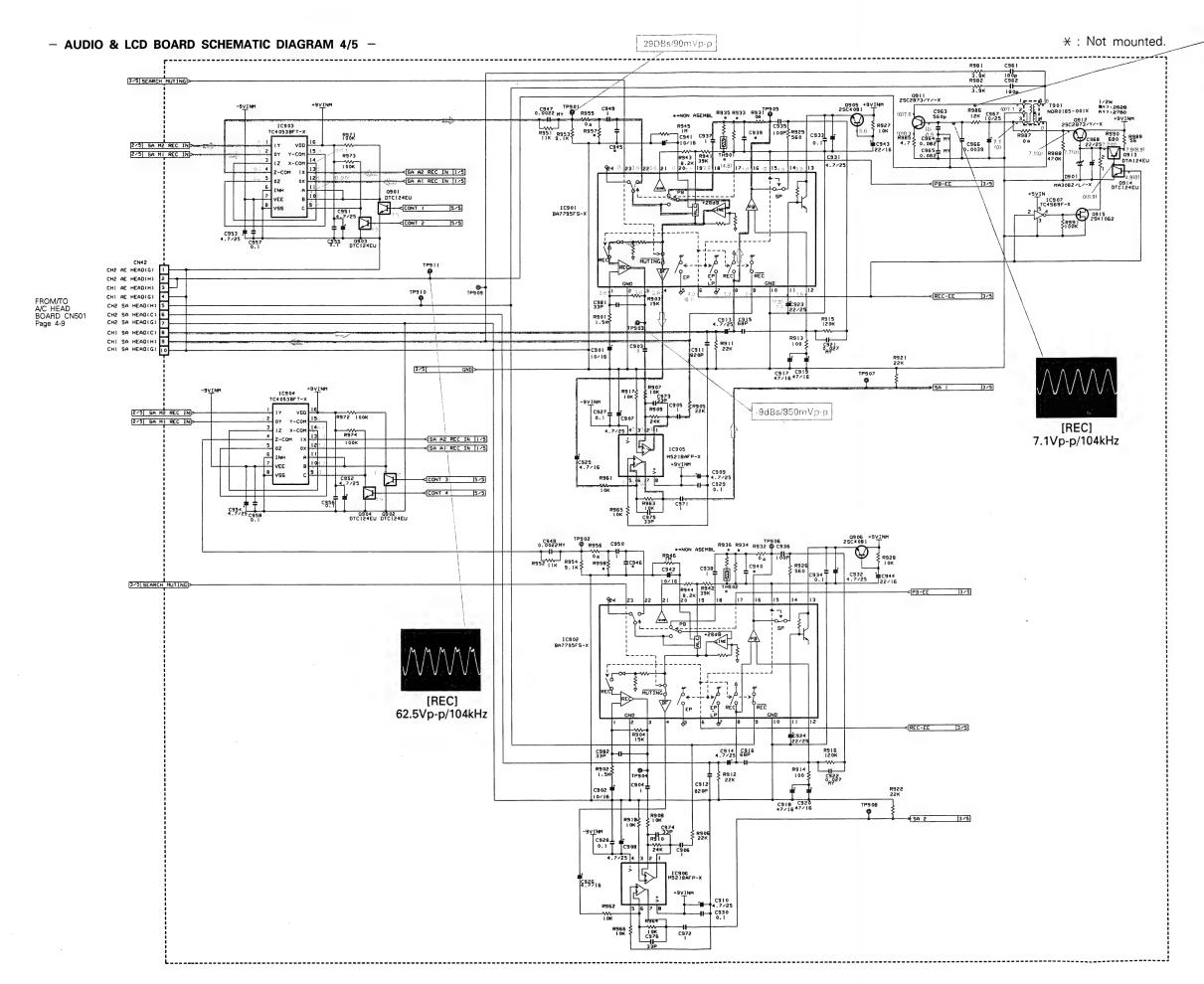


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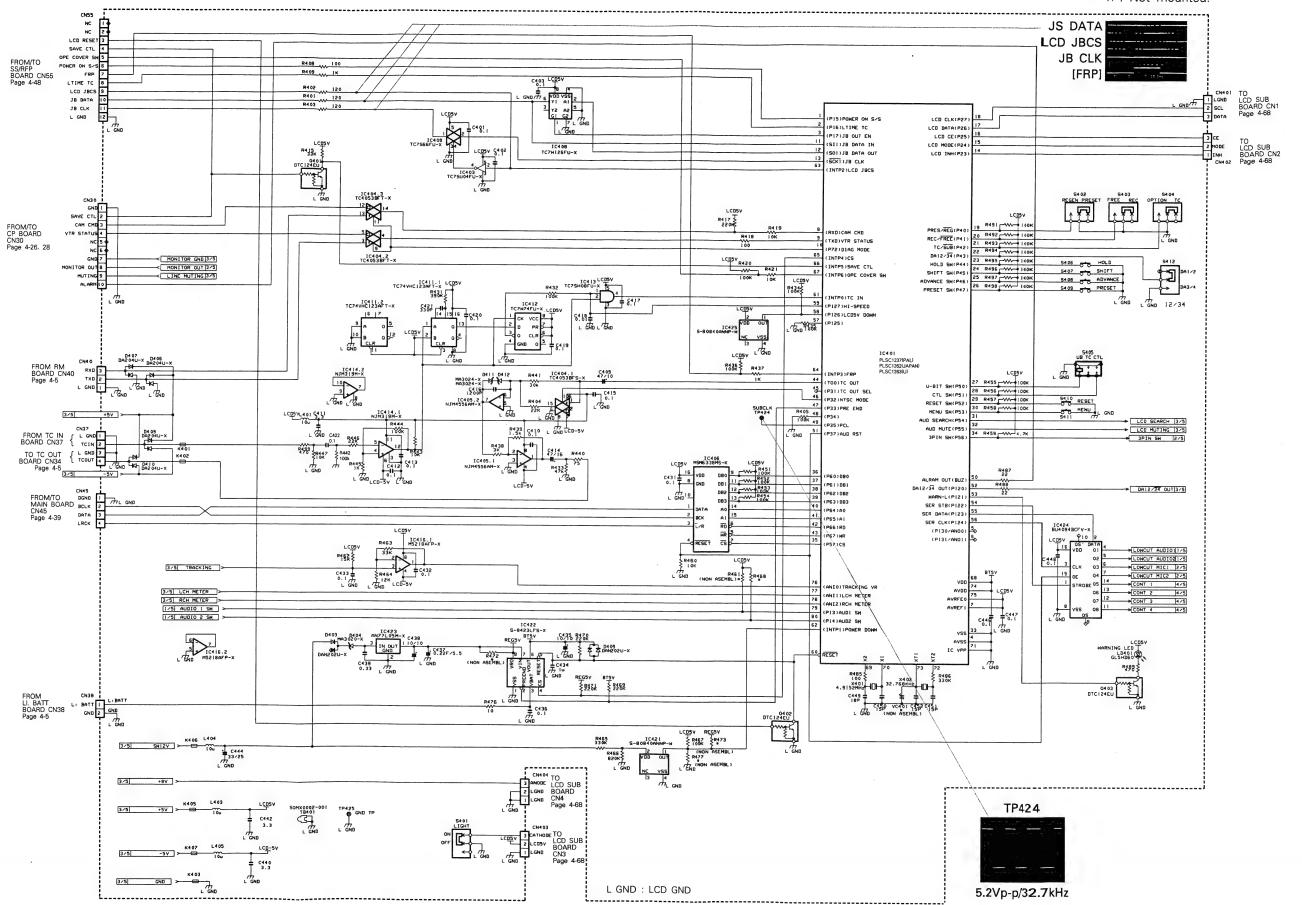


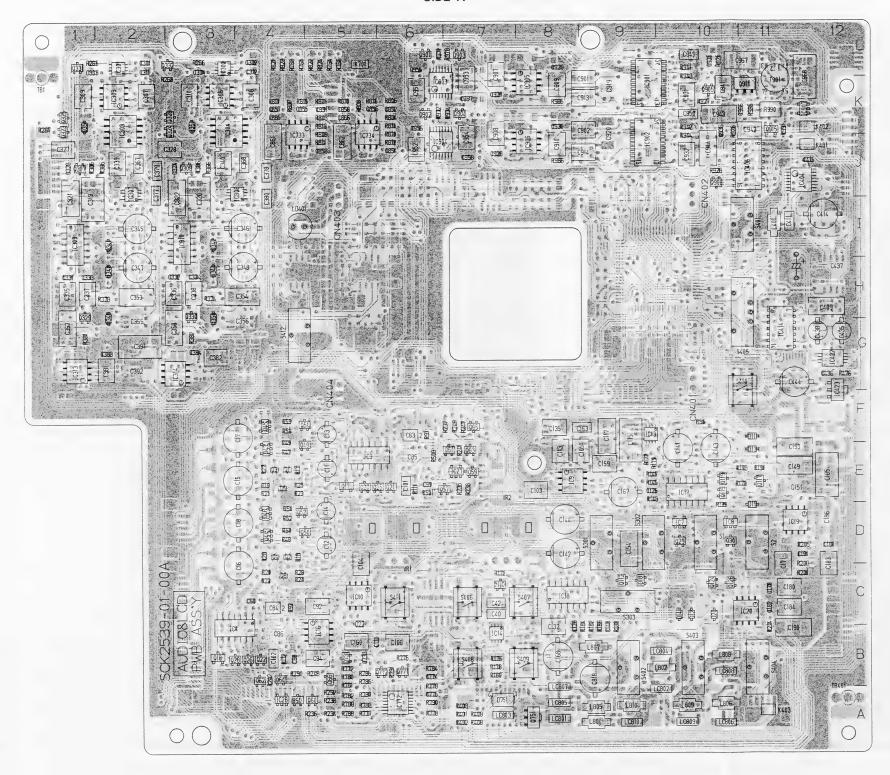






13.8Vp-p/104kHz



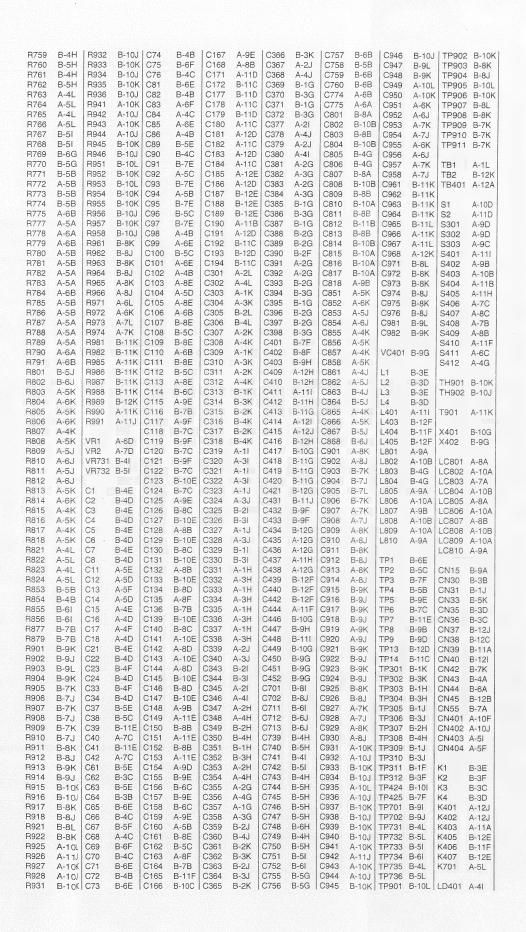


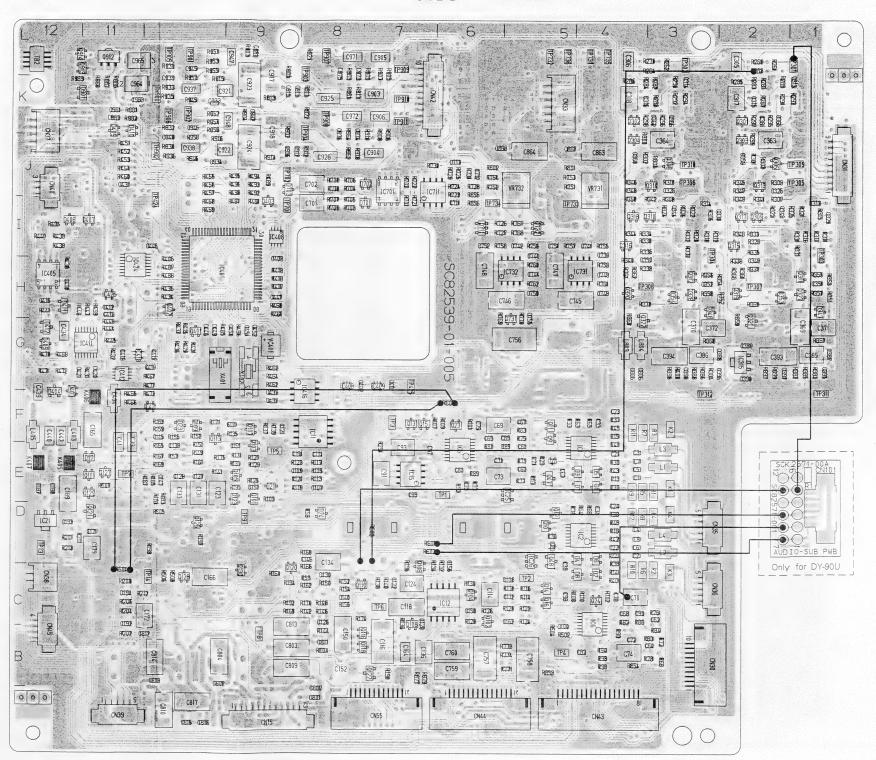
ADDRESS TABEL OF BOARD PARTS

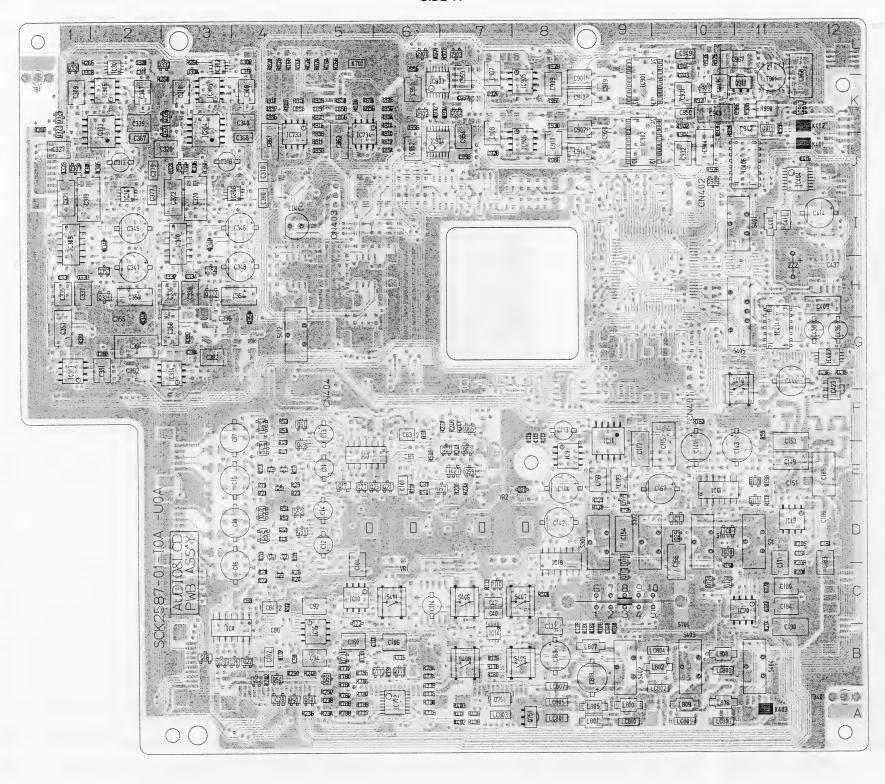
Each address may have an address error by one interval.

Side — Y axis X axis

Old			X axis												
101	D 4E		B-5C	Q323	A-1J	R6	B-4C	R107	B-6F	R194	B-9C	R325	B-11	R444	B-11G
IC1 IC2	B-4E B-4D	Q16 Q17	A-5E	Q324	A-3J	R7	B-4F	R108	B-5C	R195	B-9E	R326	B-3I	R445	B-11G
IC3	A-6E	Q18	A-3B	Q325	A-1K	R8	B-4D	R109	B-6F	R196	B-7C	R329	B-21	R446	B-12H
IC4	A-4B	Q21	A-6E	Q326	A-3K	R9	E-4E	R110	B-4C	R197	B-10D	R330	B-41	R447	B-11H
IC5	B-6E	Q22	A-4B	Q327	B-1H	R10	B-4C	R111	A-6E	R198	B-11D	R331	B-11	R451	B-11J
IC6	B-4B	Q23	B-6F	Q328	В-ЗН	R11	B-4F	R112	A-4B	R201	A-12C	R332	B-31	R452	B-11J
IC7	A-10D	Q24	B-4C	Q329	A-1G	R12	B-4D	R113	B-8E	R202	B-11B	R333	B-21	R453	B-11J
IC8	A-11D	Q25	A-6E	Q330	A-3G	R13	B-4E	R114	B-5C	R203	A-12D	R334	B-41	R454	B-11J
IC9	A-8E	Q26	A-4B	Q331	A-1K	R14	E-4C	R115	B-8E	R204	B-11C	R335	B-21	R455	B-10J
IC10	A-5C	Q27	A-5E	Q332	A-3L	R15	B-4F	R116	B-5C	R205	A-12D	R336	B-41	R456	B-10J
IC11	B-8E	Q28	A-3B	Q401	B-10G	R16	B-4D	R117	B-8E	R206	B-11C	R337	B-2H	R457	B-101
IC12	B-7C	Q29	A-10D	Q402	B-10H	R17	F-4E	R118	B-5C	R207	B-12D	R338	B-4H	R458	B-10I B-10I
IC13	A-9F	Q30	A-11D	Q403	B-9I	R18	A-4D	R119	B-8E	R208	B-11C	R339	B-2H B-4H	R459 R460	B-11J
IC14	A-7B	Q43	A-4E	Q711	B-61	R19	A-4E	R120	B-5C	R211	B-12D	R340 R341	B-21	R461	B-9H
IC15	B-7E	Q44	A-4D	Q731	B-5G	R20	A-4C	R121	B-8E B-5C	R212 R213	B-11C B-12D	R342	B-3I	R462	B-9F
IC16	A-5C	Q45	A-4F	Q732	B-5I	R21 R22	A-4E A-4C	R122 R123	B-8E	R214	A-11B	R343	B-2I	R463	B-9G
IC17 IC18	A-10E A-8C	Q46 Q47	A-4D B-5E	Q733 Q751	A-5B A-8A	R23	A-4E	R124	B-5C	R233	A-7E	R344	B-41	R464	B-9F
IC19	A-12D	Q47	B-5D	Q771	A-6B	R24	A-4C	R125	B-9E	R234	A-5A	R345	B-2J	R465	B-11F
IC20	A-11C	Q49	A-5E	Q772	A-6B	R25	A-4E	R126	B-6C	R235	A-7E	R346	B-4J	R466	B-11F
IC21	B-12D	Q50	A-5D	Q901	A-6L	R26	A-4C	R127	B-9E	R236	A-5A	R347	B-2I	R467	B-11F
IC25	B-5E	Q51	A-5F	Q902	A-6K	R27	A-4E	R128	B-6C	R237	A-7F	R348	B-41	R468	B-9H
IC26	B-5D	Q52	A-4D	Q903	A-7L	R28	A-4D	R129	B-9E	R238	A-5A	R349	B-21	R469	B-12G
IC27	A-7E	Q57	A-6E	Q904	A-7K	R29	B-5E	R130	B-6C	R241	A-7E	R350	B-41	R470	B-12G
IC28	A-4A	Q58	A-4A	Q905	A-10K	R30	B-5D	R131	B-9E	R242	A-4B	R351	B-1H	R471	B-12G B-12G
IC301	A-2K	Q59	A-7E	Q906	A-10J	R33	B-5F	R132	B-6C	R247	A-7F	R352	B-2H B-1H	R472	B-12G
IC302	A-3K	Q60	A-5A	Q911	A-11K	R34	E-5D	R133	B-9E	R248	A-5B	R353		R473 R476	A-12G
IC303	A-2J	Q61	A-7E	Q912	B-11L	R35	B-4E	R134	B-7C	R249	A-7F	R354 R355	B-2H B-1H	R477	B-11F
IC304	A-3J	Q62	A-4B	Q913	B-12K	R36	B-4D	R135	B-9F	R250	A-4B	R356	B-3H	R485	B-10G
IC305	A-2K	Q63	A-7E	Q914	B-12L	R37	B-4F B-4D	R136 R137	B-7C B-9F	R251 R252	B-7E A-5A	R357	B-1H	R486	B-9G
IC306	A-3K	Q64	A-4B	Q915	A-11J	R38 R39	B-4E	R138	B-7C	R261	B-2K	R358	B-3H	R487	B-10H
IC307 IC308	A-2I A-4I	Q65 Q66	A-7F A-5B	D1	B-4E	R40	B-4C	R139	B-9F	R262	B-3K	R359	B-2G	R488	B-10H
IC309	A-11	Q101	B-9E	D2	B-4C	R41	B-4E	R140	B-7C	R263	B-2K	R360	B-4G	R489	B-9J
IC310	A-31	Q102	B-6C	D3	B-4E	R42	B-4D	R141	B-10E	R264	B-3K	R361	B-2H	R491	B-91
IC313	A-1F	Q103	B-9E	D4	B-4D	R43	B-4E	R142	B-8C	R265	A-1L	R362	B-4H	R492	B-91
IC314	A-3F	Q104	B-6C	D5	B-4E	R44	B-4D	R143	A-9E	R266	A-3L	R363	B-2H	R493	B-9J
IC315	B-2G	Q105	B-9E	D6	B-4D	R45	B-4F	R144	B-8B	R267	A-1J	R364	B-4H	R494	B-9J
IC401	B-10H	Q106	B-7C	D7	B-4E	R46	B-4D	R145	A-9E	R268	A-3K	R365	A-2J	R495	B-9J
IC403	B-8F	Q107	B-9F	D8	B-4C	R47	A-4E	R146	B-8C	R269	B-2L	R366	A-3J	R496	B-9J
IC404	A-12J	Q108	B-7C	D11	A-11F	R48	A-4D	R147	A-9E	R270	B-3L	R367	B-1G	R497	B-91
IC405	B-12H	Q109	B-10F	D12	A-10C	R49	A-4E	R148	B-8C	R281	B-2K	R368	B-3G	R498	B-91 B-11H
IC406	A-11J	Q110	B-8C	D13	A-11E	R50	A-4D	R149	B-10E	R282	B-3K	R369	B-2H B-4H	R499 R501	A-6E
IC408	B-91	Q111	B-11E	D14	A-10C	R51	A-4F	R150	B-8C	R283	B-2K	R370 R371	B-11	R502	B-5B
IC409	B-7F	Q112	A-9C	D17	B-11E	R52	A-4D	R151	B-10E	R284 R285	B-4K B-2K	R372	B-3I	R503	A-6E
IC411	B-11G	Q113	B-10E	D18	A-9C	R53 R54	A-4F A-4D	R152 R153	B-8C B-10F	R286	B-4K	R373	A-2H	R504	B-5B
IC412	B-11G B-11G	Q114 Q115	A-7C A-10E	D19 D20	A-11D A-10C	R55	A-10F	R154	B-8C	R287	B-2K	R374	А-3Н	R505	B-10D
IC413 IC414	A-11G	Q116	B-8B	D21	B-9E	R56	B-8D	R155	B-10E	R288	B-3K	R381	A-1G	R506	B-10C
IC416	B-8F	Q117	A-11E	D22	A-5C	R57	B-10E	R156	B-8C	R289	B-2K	R382	A-3G	R507	B-11E
IC421	B-10F	Q118	B-8B	D23	B-10F	R58	E-8C	R159	B-10F	R290	B-3K	R383	B-1G	R508	B-10C
IC422	A-12G	Q119	A-10E	D24	B-8D	R63	B-4F	R160	B-8D	R291	B-2K	R384	B-3G	R601	B-7D
IC423	A-12F	Q120	B-9C	D341	A-21	R64	B-4D	R161	B-10E	R292	B-3K	R385	B-1G	R602	B-7D
IC424	B-11H	Q121	B-11D	D342	A-31	R65	B-4F	R162	B-8C	R293	B-1K	R386	B-3G	R603	B-7D
IC425	B-11H	Q122	B-7B	D343	A-2H	R66	B-4D	R163	B-10F	R294	B-3K	R387	B-1G	R604	B-11C
IC701	B-71	Q123	B-9E	D344	А-ЗН	R67	B-5E	R164	B-9C	R295	B-2K	R388	B-3G	R605	B-6F
IC711	B-71	Q124	A-10C	D347	B-1H	R68	B-3B	R165	B-10E		B-3K	R397	B-2G B-3G	R701 R702	B-71 B-7J
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	B-6H	Q126	A-11C B-11E	D349 D350	A-2G A-3G	R72 R75	B-3B B-5E	R167 R168	B-10E B-9C	R298 R299	B-4K B-2J	R400	B-3G	R704	B-8I
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IC903	A-6K	Q302	B-4K	D403	B-12F	R80	B-3B	R173	A-11E		B-3J	R405	B-10H	R709	B-81
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IC905	A-8K	Q304	B-4J	D405	B-12G	R82	B-4C	R175	B-10E		A-3J	R409	A-7A	R721	B-7I
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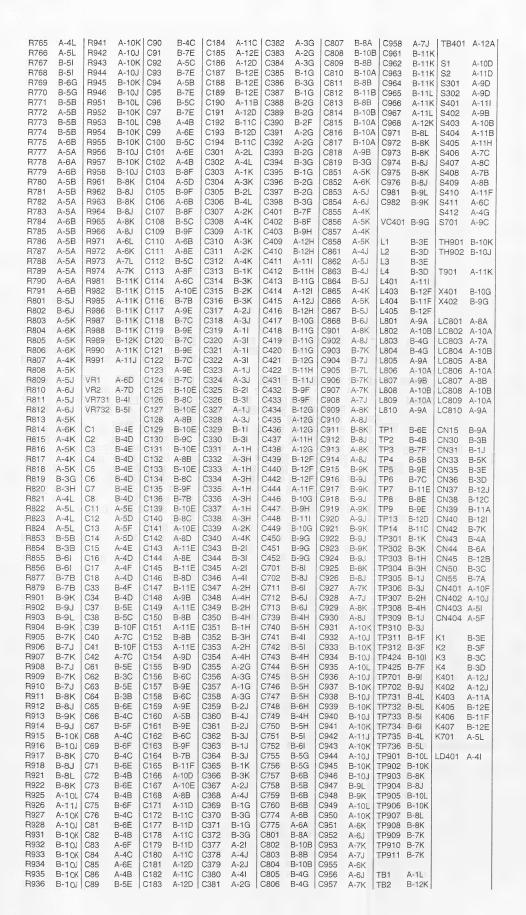


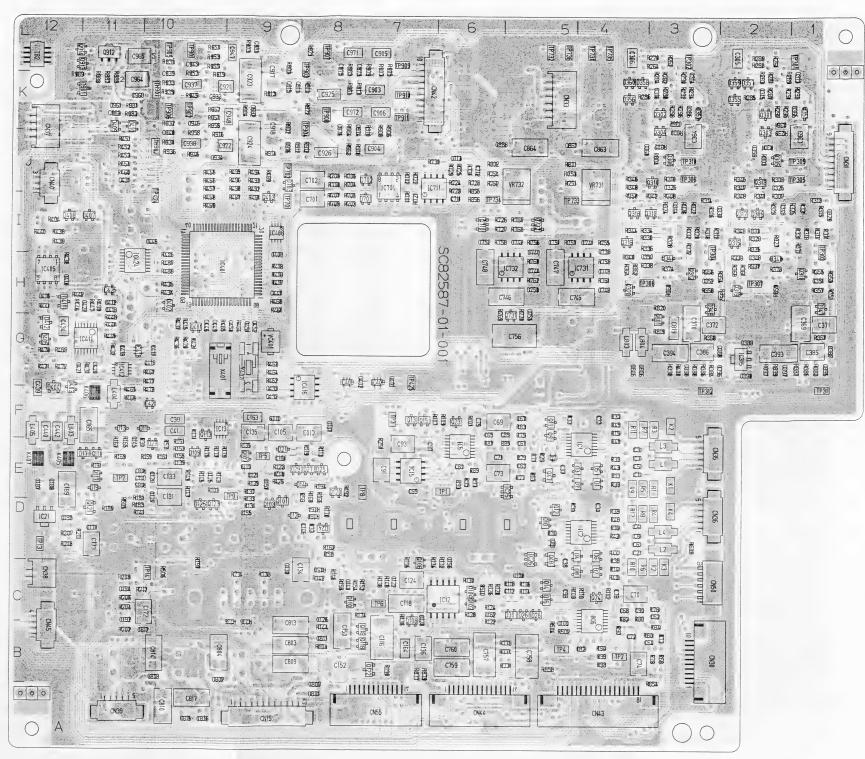


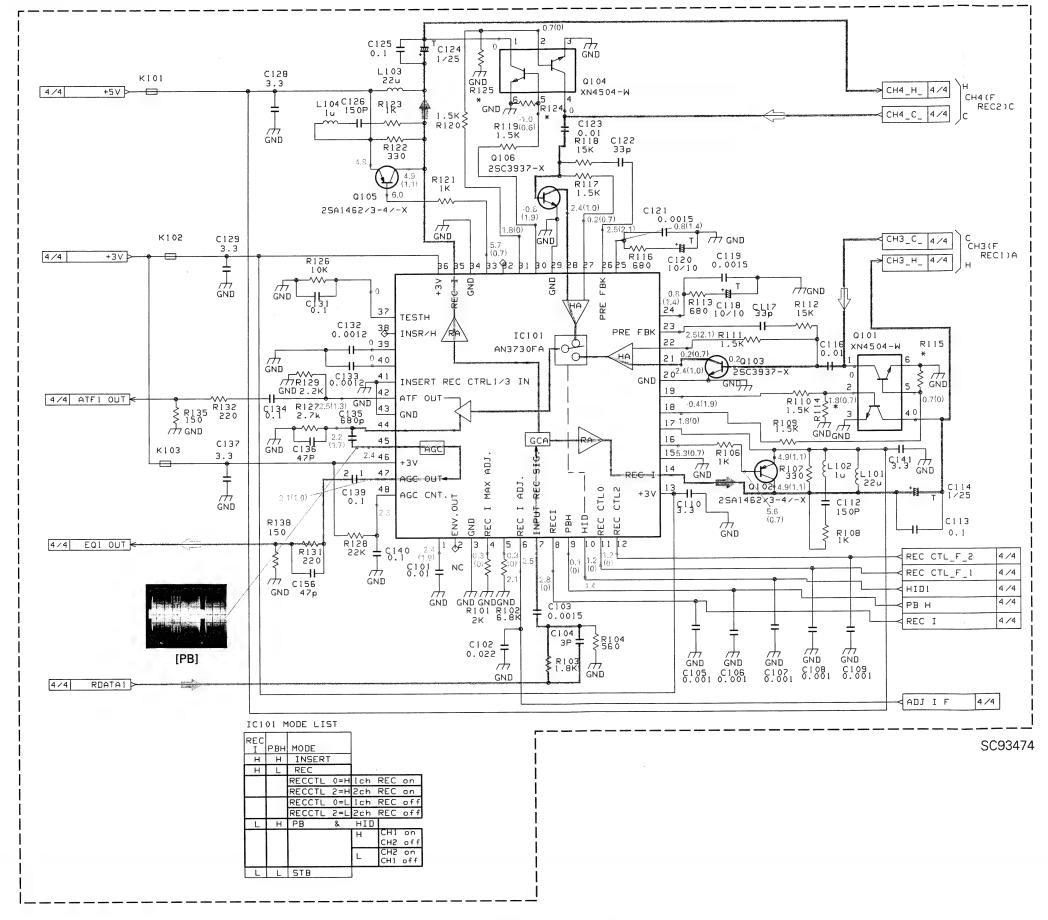
ADDRESS TABEL OF BOARD PARTS

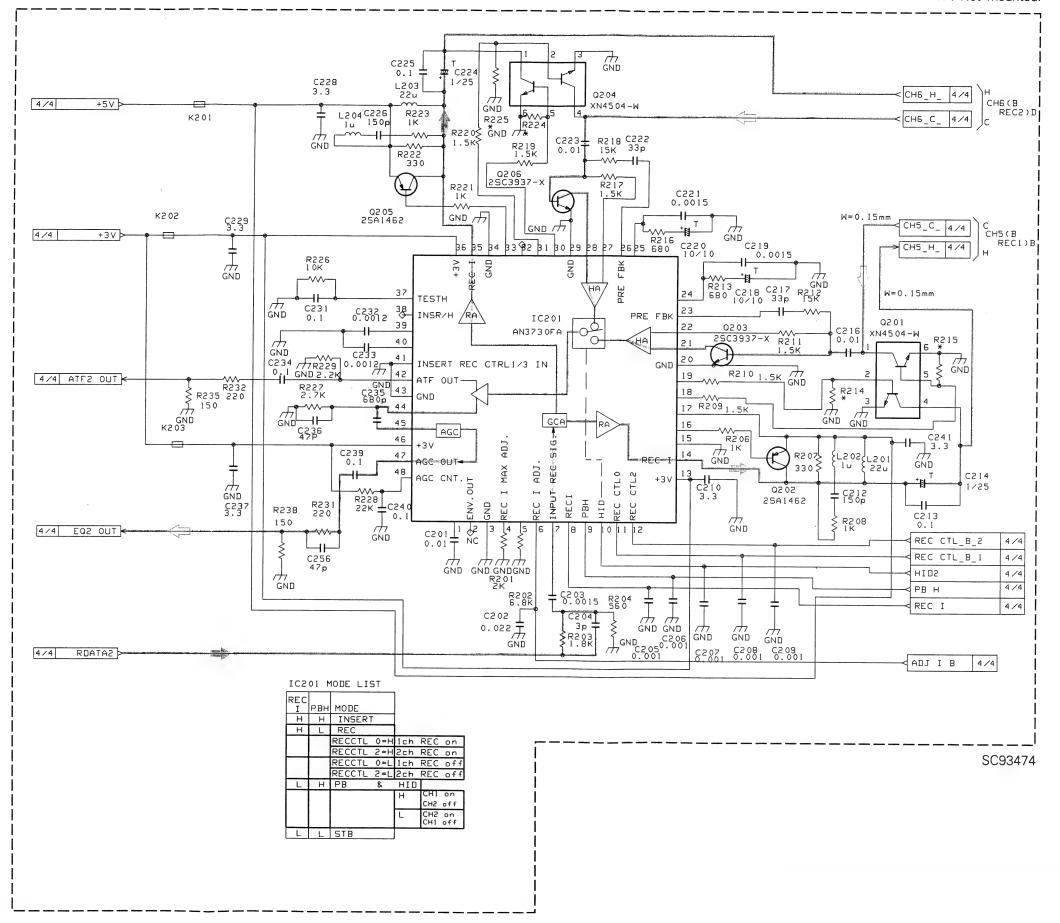
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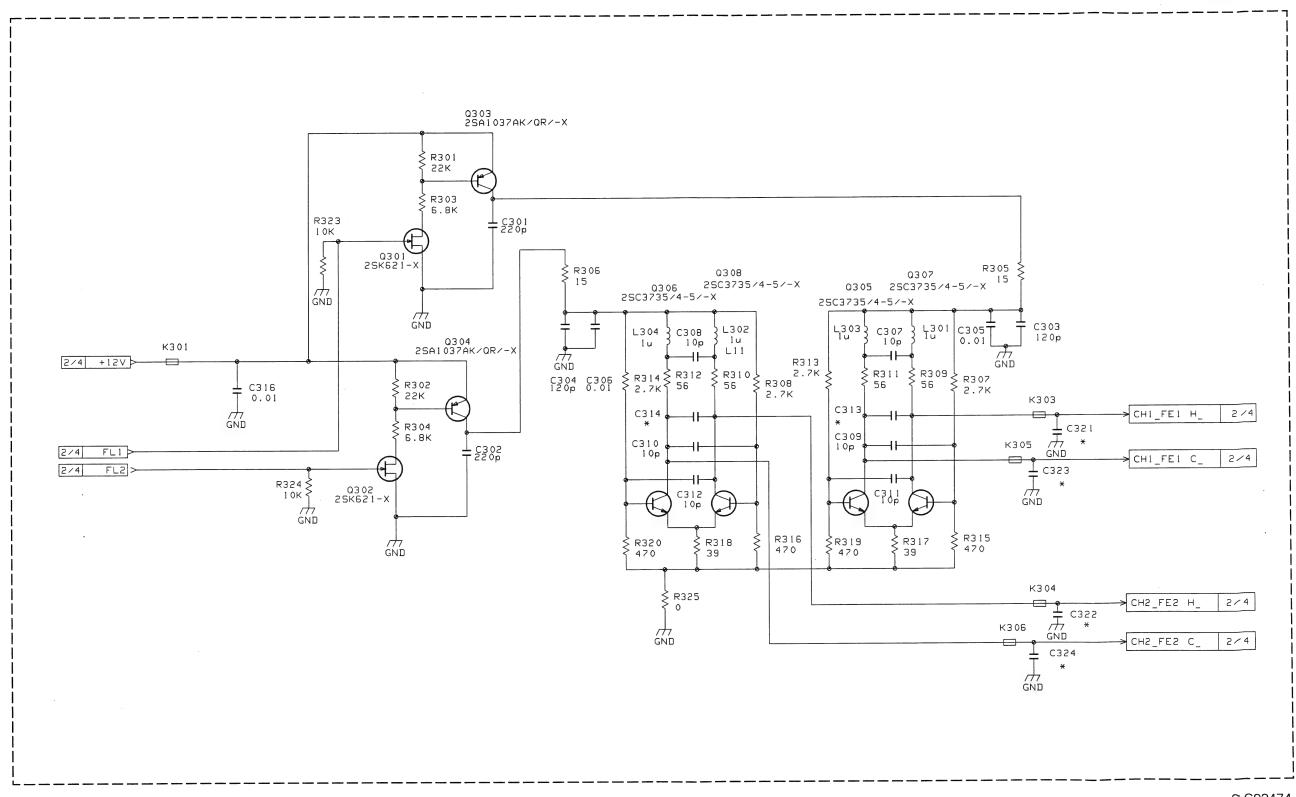
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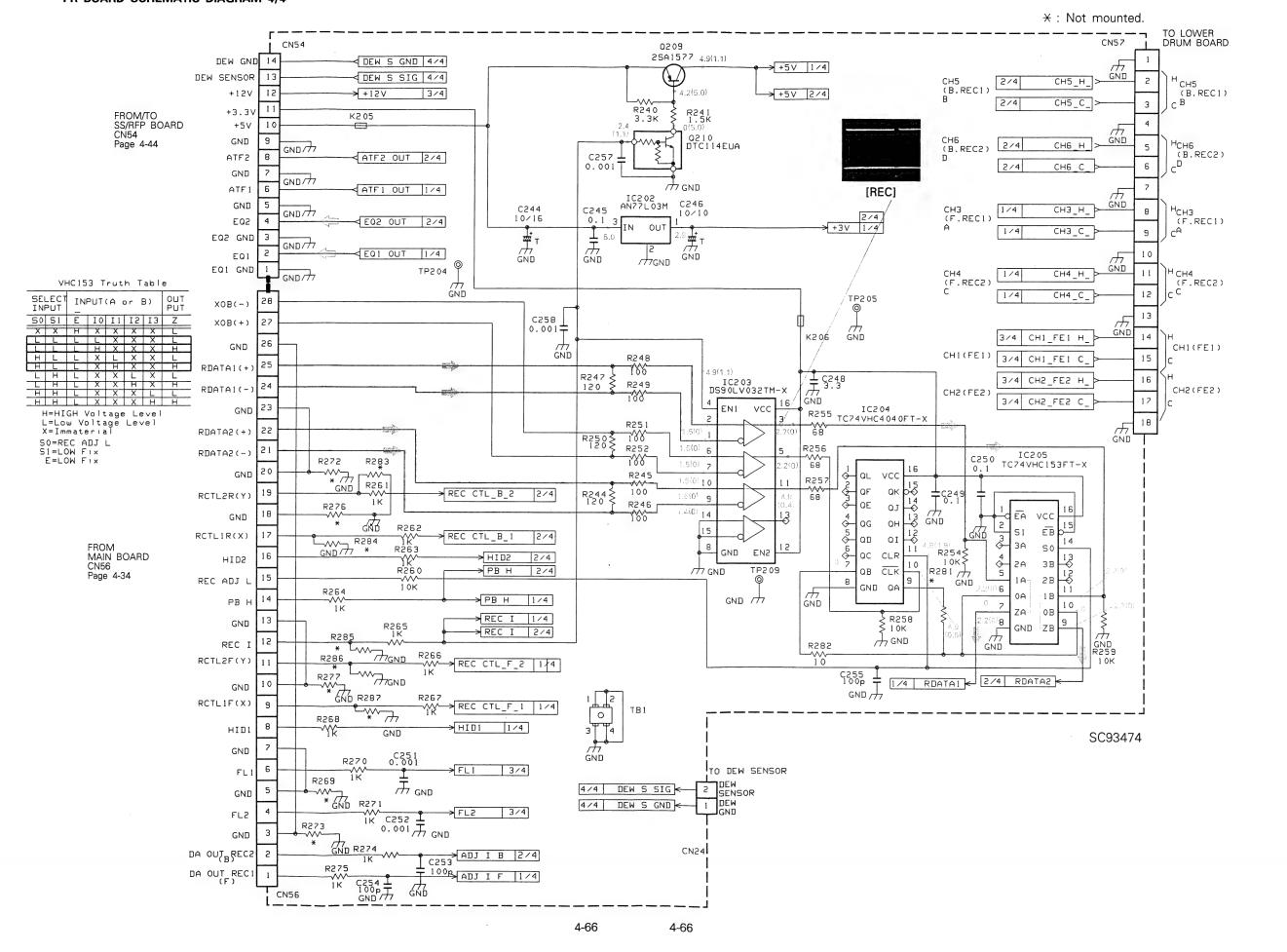


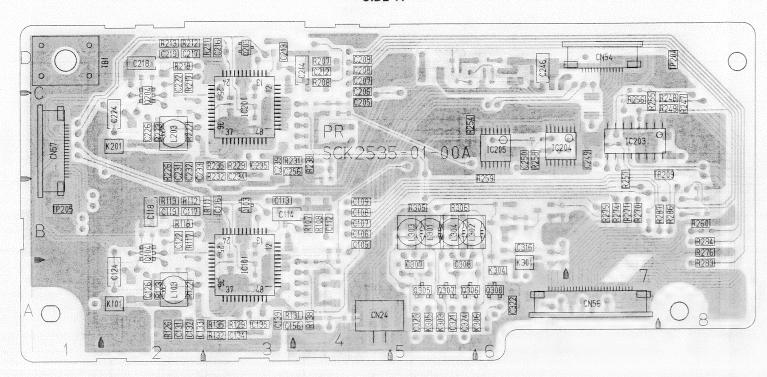




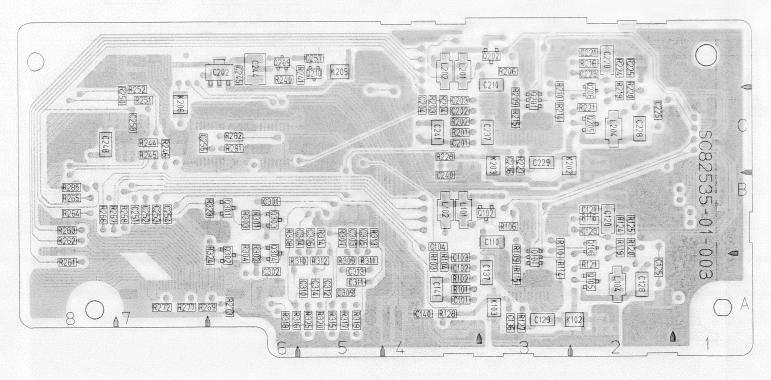


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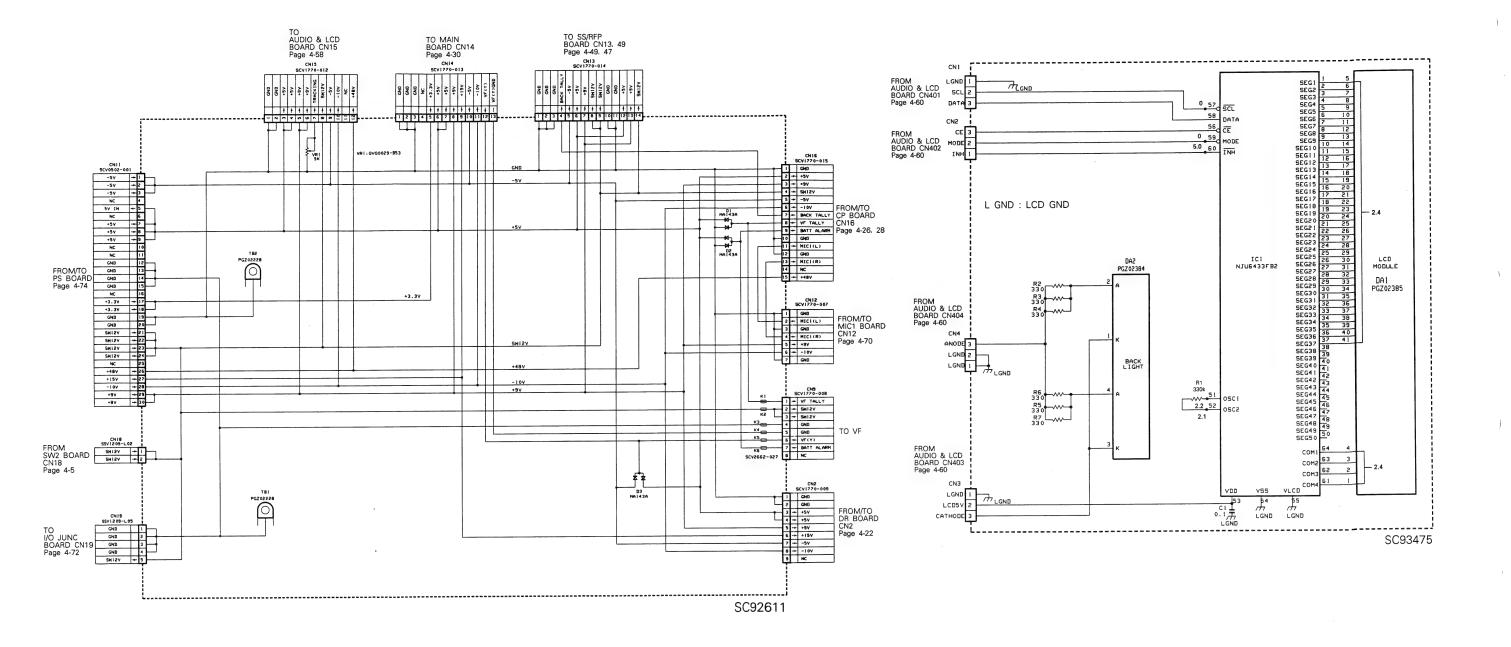
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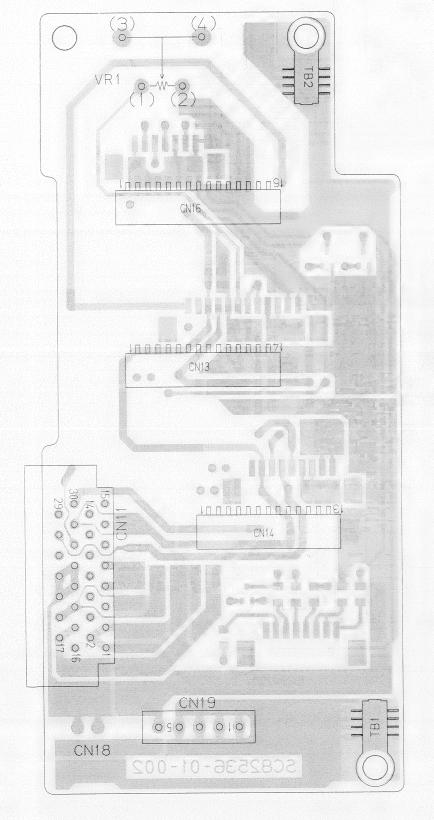
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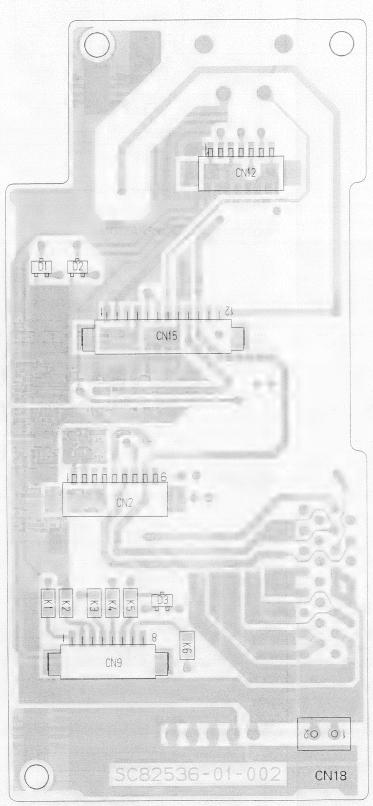
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R120 B-2A	R273 B-6A	C204 B-4C	L302 A-5B
R121 B-2A	R274 A-7B	C205 A-4C	L303 A-5B
R122 A-2A	R275 A-7B	C206 A-4C	L304 A-5B
R123 A-2A	R276 A-8A	C207 A-4C	
R124 B-2B	R277 B-7A	C208 A-4C	K101 A-1A
R125 B-2B	R281 B-6B	C209 A-4C	K102 B-2A
R126 A-2A	R282 B-6B	C210 B-3C	K103 B-3A
R127 B-3A	R283 A-8A	C212 A-4C	K201 A-1B K202 B-2B
R128 B-4A	R284 A-8B	C213 A-3C C214 A-4C	K202 B-2B
R129 A-3A R131 A-3A	R285 B-8B R286 A-8B	C214 A-4C C216 A-3C	K205 B-5C
R132 A-3A	R287 A-7B	C217 A-2C	K206 B-7C
R135 A-3A	R301 B-6B	C218 A-2C	K301 A-6A
R138 A-4A	R302 B-6A	C219 A-2C	K303 A-5A
R201 B-4B	R303 B-6B	C220 B-2C	K304 A-6A
R202 B-4C	R304 B-6A	C221 B-2C	K305 A-5A
R203 B-4C	R305 A-5B	C222 A-2C	K306 A-5A
R204 B-4C	R306 A-5B	C223 B-2C	
R206 B-3C	R307 B-5B	C224 A-1C	CN24 A-4A
R207 A-4C	R308 B-5B	C225 B-1C	CN54 A-7C
R208 A-4C	R309 B-5A	C226 A-2C	CN56 A-7A
R209 B-3C	R310 B-5A	C228 B-2C	CN57 A-1B
R210 B-3C	R311 B-5A	C229 B-3B	TB1 A-1C
R211 A-2C	R312 B-5A	C231 A-2B C232 A-2B	TOT ATIO
R212 A-2C R213 A-2C	R313 B-5B R314 B-5B	C232 A-2B	
R214 B-3C	R315 B-5A	C234 A-3B	
R215 B-3C	R316 B-5A	C235 A-3B	
	1	1	1



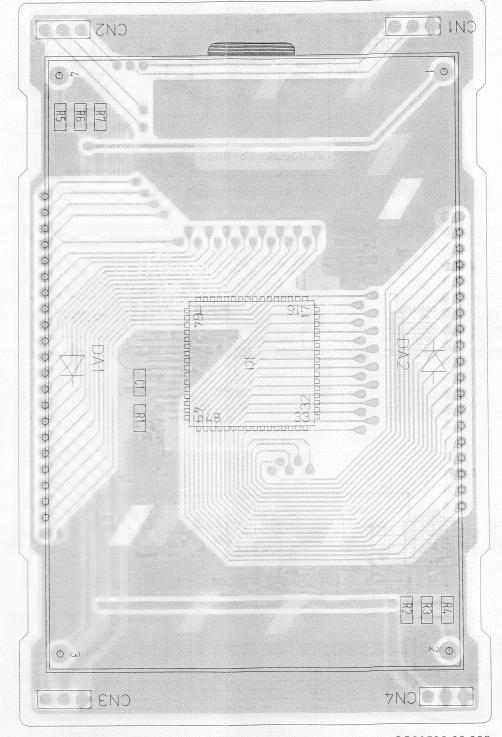






SC82536-01-002

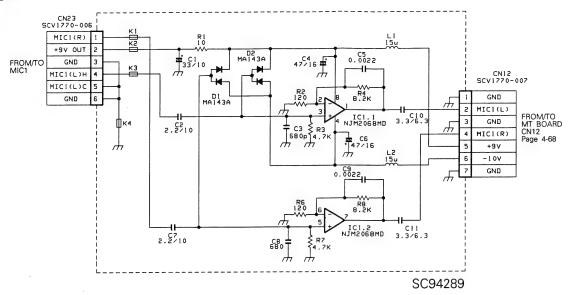
- SIDE B -



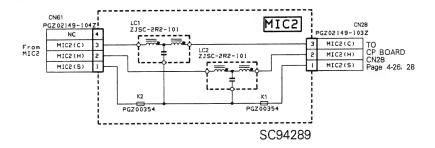
SC82536-02-002

4.29 MIC1 13, MIC 241, SW1 24, SW4 27, OPERATIN 14, MEMORY 40, CN 38BOARD SCHEMATIC DIAGRAMS

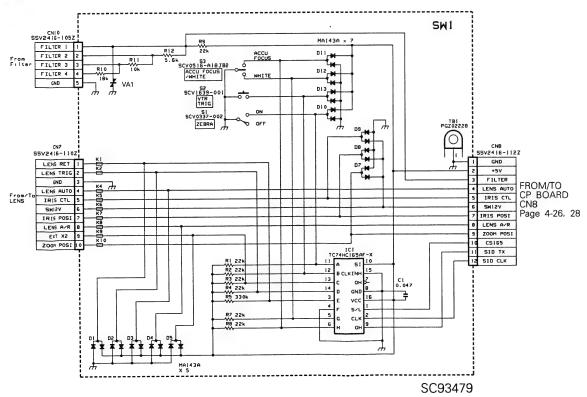
•MIC1



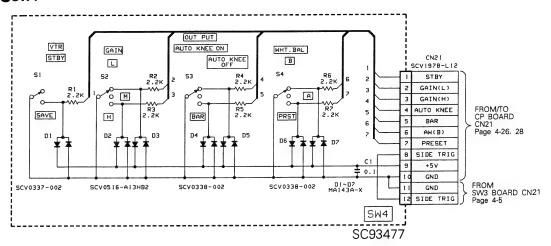
●MIC2



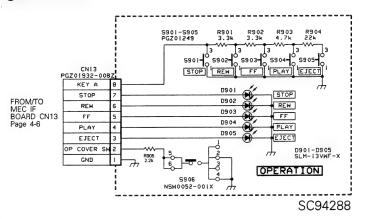
OSW1



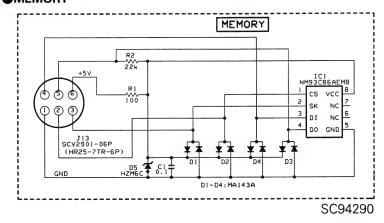
OSW4



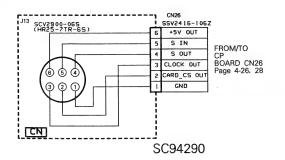
OPERATION



•MEMORY

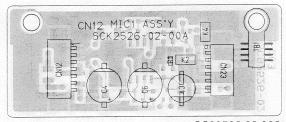


OCN



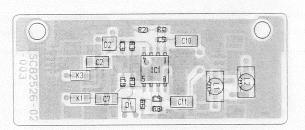
●MIC1

- SIDE A -



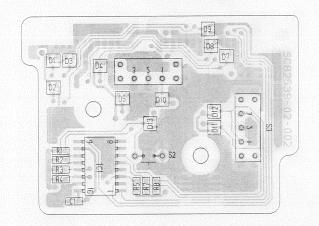
SC82526-02-003

- SIDE B -

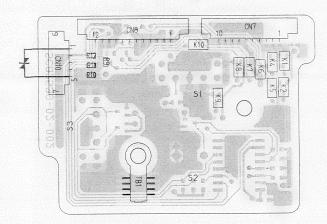


OSW1

- SIDE A -

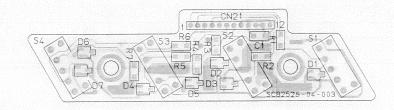


- SIDE B -



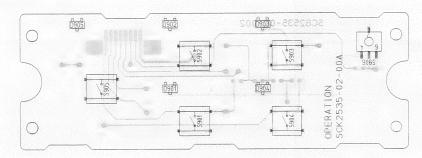
OSW4

- SIDE B -

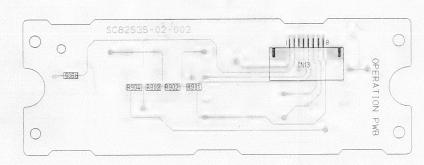


OPERATION

- SIDE A -



- SIDE B -

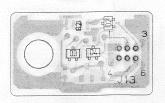


SL82078-002

MEMORY

- SIDE A -

- SIDE B -

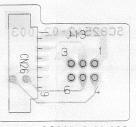


9 1114 8 18 7 1111 8 15 1

SC82542-01-003

OCN

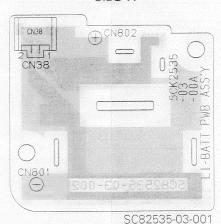
- SIDE A -



SC82542-02-003

OLI-BATT

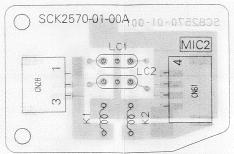
- SIDE A -



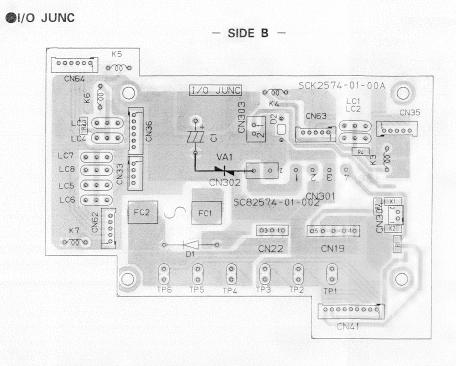
00020

●MIC2

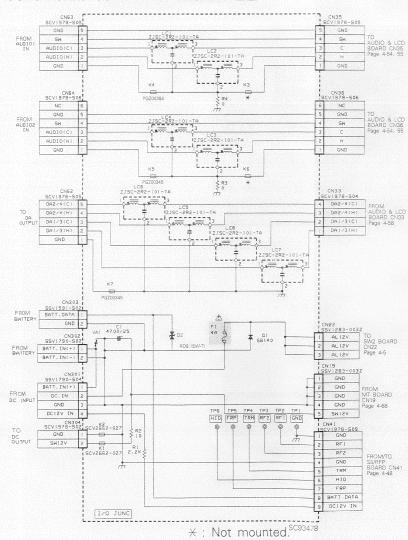
- SIDE A -

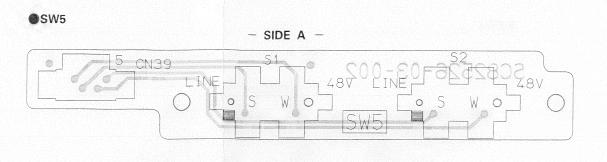


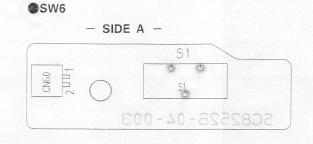
SC82570-01-001

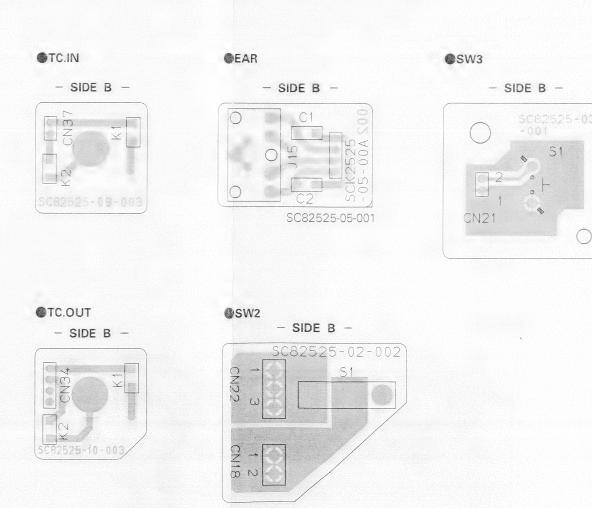


●I/O JUNC BOARD SCHEMATIC DIAGRAM 12



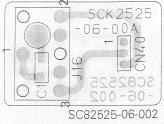








PRM



●MON.OUT - SIDE B -

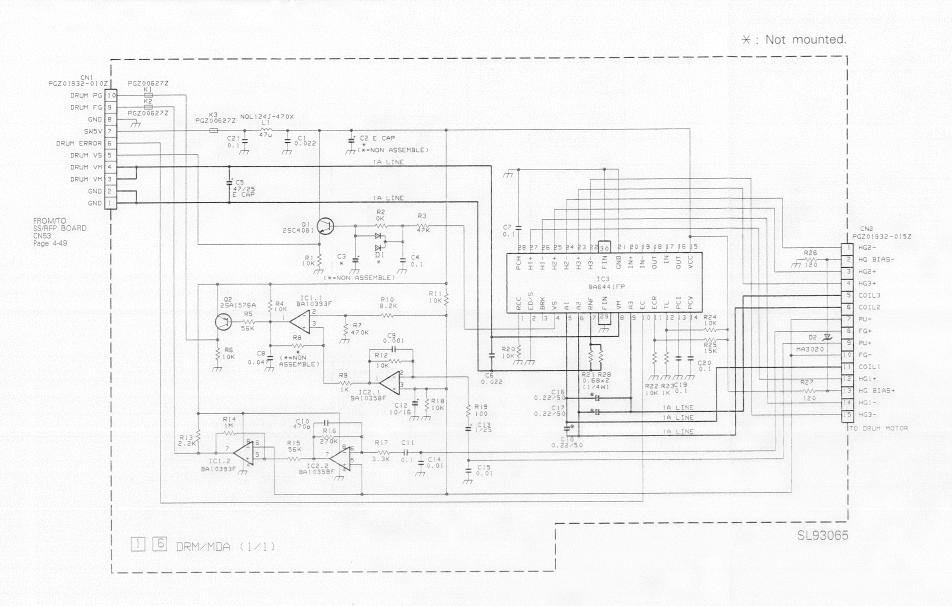


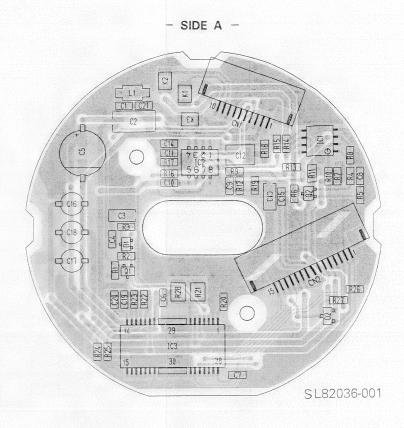
SC82525-11-001

@GEN.IN

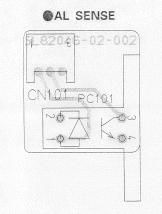
- SIDE B -

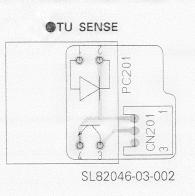


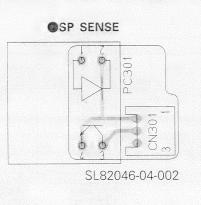


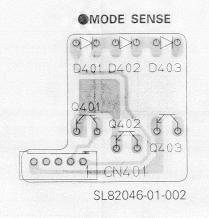


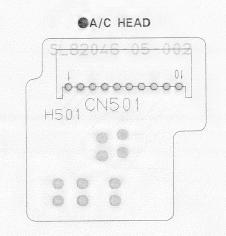
4.33 AL SENSE, TU SENSE, SP SESSE, MODE SENSE, A/C HEAD, BEGIN SENSE, END SENSE CIRCUIT BOARDS

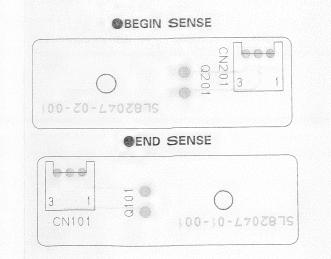






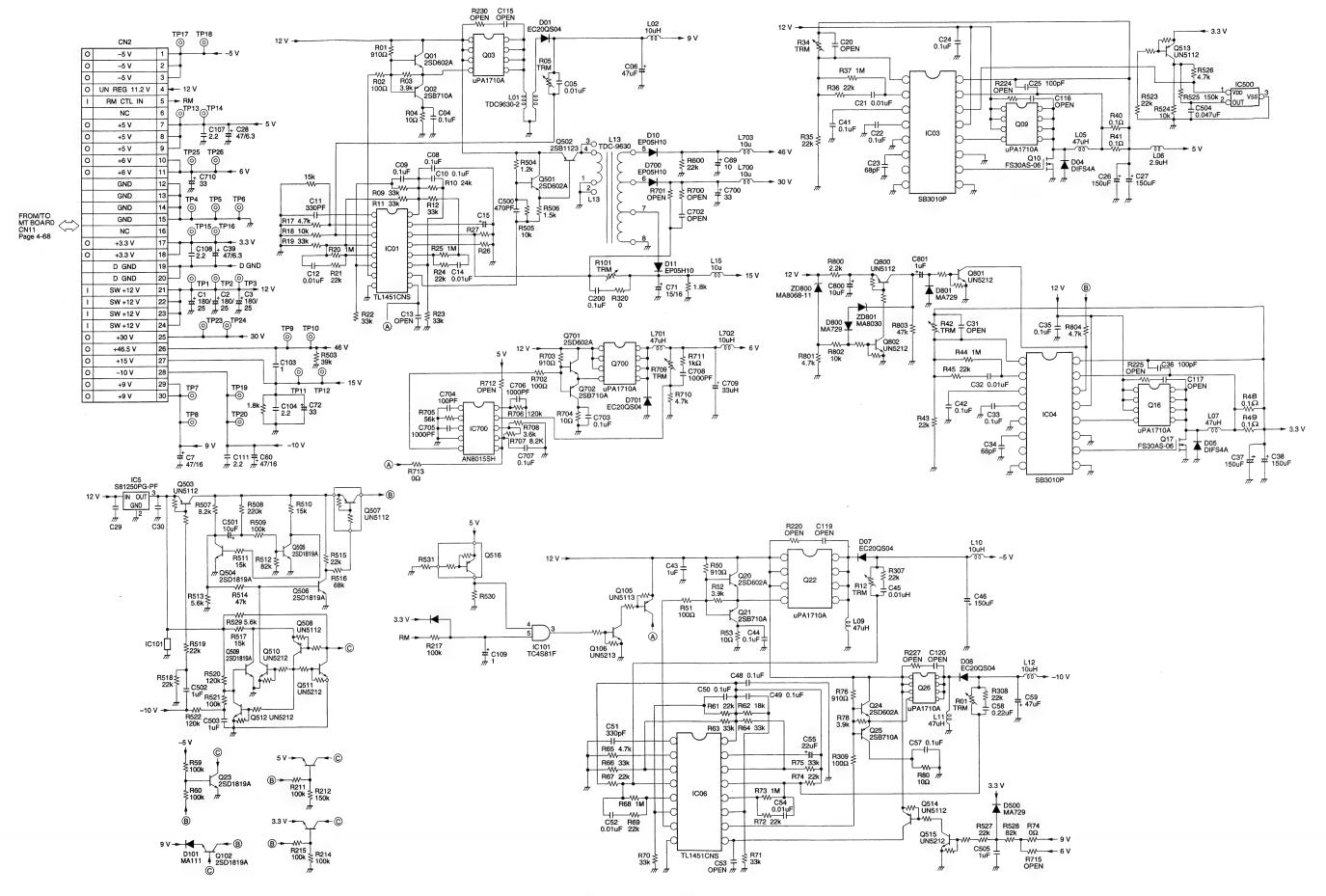






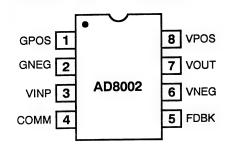
4.34 PS REFERENCE DIAGRAM

Note: When something is wrong with this circuit, replace it with a new assembly. Each component is not available as service parts.



4.35 IC BLOCK DIAGRAMS

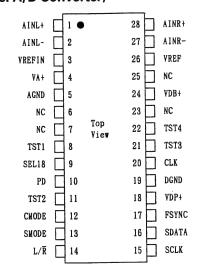
AD603AR-X [ANALOG DEVICES] (Variable Gain CTL Amplifier)

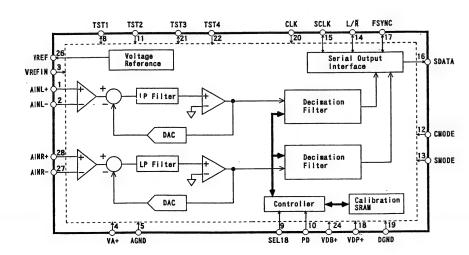


Pin funoction

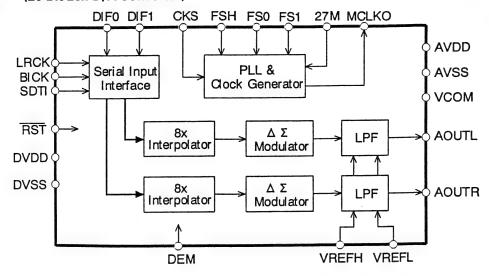
Pin No.		Pin Name
1	GPOS	Gain CTL Input "HI"
2	GNEG	Gain CTL Input "LOW"
3	VINP	Amp. Input
4	COMM	GND
5	FDBK	Feedback
6	VNEG	Vss
7	VOUT	Output
8	VPOS	V _{DO}

AK5340-VS [ASAHIKASEI] (18 bit 2Channel A/D Converter)

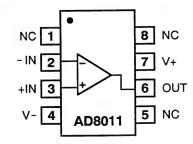




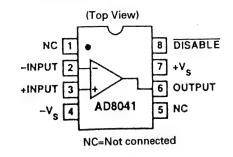
AK4323VF-X [ASAHIKASEI] (20 Bit 2ch D/A Converter)



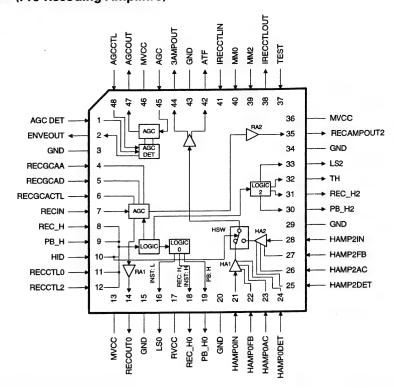
AD8011AR-X [ANALOG DEVICES] (Current Feedback Amplifier)



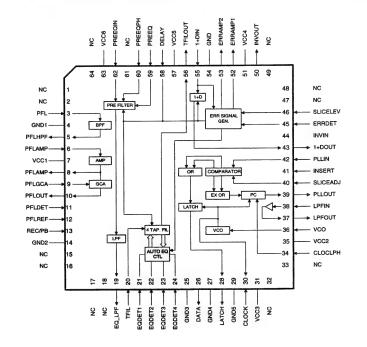
AD8041AR-XE [ANALOG DEVICES] (Op.Amplifier)



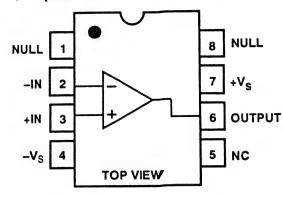
AN3730FA [MATSUSHITA] (Pre-Recoding Amplifire)



AN3740FAP [MATSUSHITA] (Playback Amplifire)

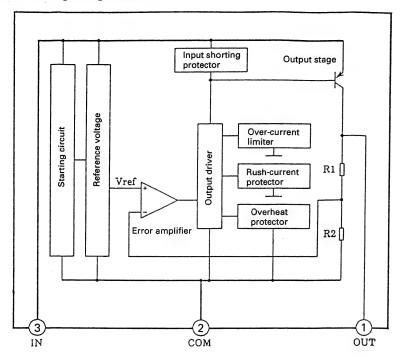


AD817AR-X [ANALOG DEVICES] (Hi-Speed Low Power Op.Amp.)

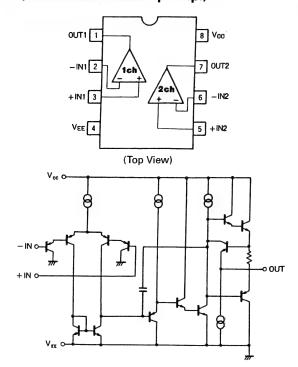


NC = NOT CONNECTED

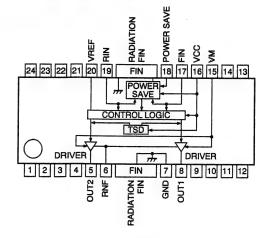
■ AN77L03M-X [MATSUSHITA] (Voltage Regulator)



■ BA10358F-X [ROHM] (Dual Ground Sense Op.Amp.)



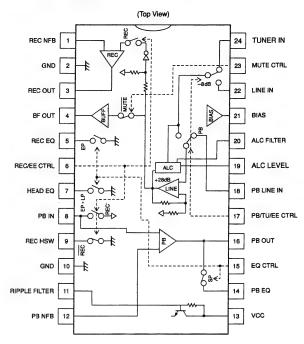
BA6285FP-X [ROHM] (Reversible Motor Driver)



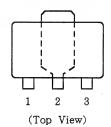
(Top View)

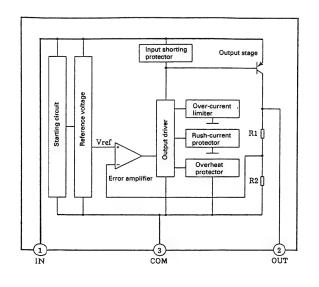
Pin No.	Symbol	Function
1	NC	
2	NC	
3	NC	
4	NC	
5	OUT 2	Motor drive output
6	RNF	GND for motor drive output
7	GND	GND
8	OUT 1	Motor drive output
9	NC	
10	NC	
11	NC	
12	NC	
13	NC	
14	NC	
15	VM	Power source for motor drive
16	Vcc	
17	FIN	Logic input
18	POWER SAVE	Less than 0.8 V : Movement
		More than 2 V : Stand-by
19	RIN	Logic input
20	VREF	Motor drive output voltage (high level) setting
21	NC .	
22	NC	
23	NC	
24	NC	
FIN	FIN ·	Connect the GND

BA7795FS-X [ROHM] (Audio Signal Processor)

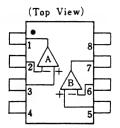


AN77L05M-X [MATSUSHITA] (Voltage Regulator)





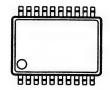
■ BA10393F-XE [ROHM] (Dual Comparator)



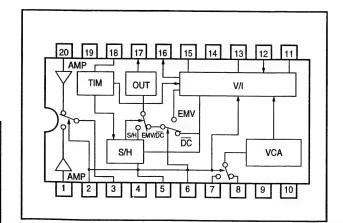
- 1. A OUTPUT
 2. A-INPUT
 3. A+INPUT

- 4. V-5. B+INPUT 6. B-INPUT 7. B OUTPUT

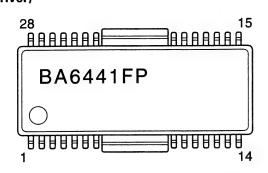
BA7043FS-X [ROHM] (VTR Auto Tracking Interface)

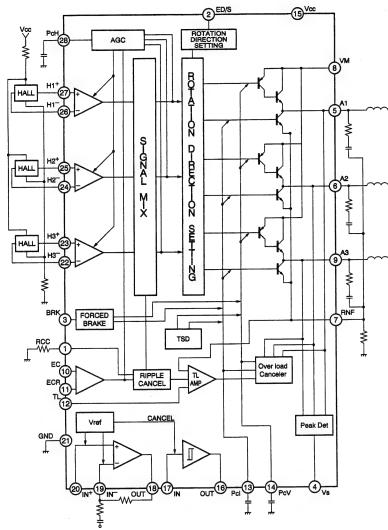


Pin No.	Function	Pin No.	Function
1	AUDIO FM IN	11	V/I RESISTOR
2	VFM/AFM CTL	12	SP/EP GAIN CTL
3	AMP OUT	13	CHARGED CAPACITOR
4	Not Connected	14	GND
5	HOLD CAPACITOR	15	EMV LEVEL ADJ.
6	DC/EMV CTL	16	EMV LEVEL DOWN
7	AUDIO FILTER IN	17	DC/EMV OUT
8	VIDEO FILTER IN	18	D F.F IN
9	VIDEO GAIN ADJ.	19	VCC
10	AUDIO GAIN ADJ.	20	VIDEO FM IN

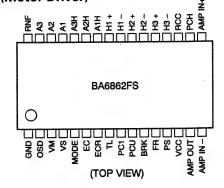


■ BA6441FP-X [ROHM] (Motor Driver)

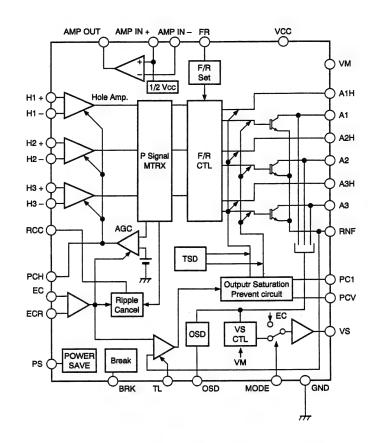




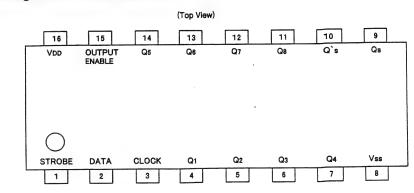
BA6862FS-X [ROHM] (Motor Driver)

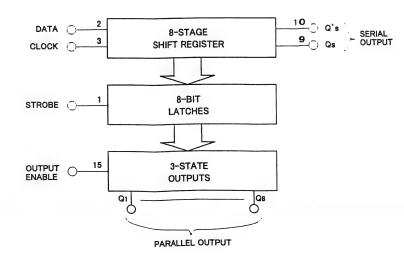


Pin No.	Symbol	Function
1	GND	GND
2	OSD	Output detect for short circuit
3	VM	Power source for motor drive
4	VS	Control for motor drive
5	MODE	Current/Voltage switching
6	EC	Torque control
7	ECR	Torque reference
8	TL	Torque limited
9	PCI	Output saturation prevent level (low level)
10	PCV	Output saturation prevent level (high level)
11	BRK	Break input H: Break L: Movement
12	FR	Foward/Reverse CTL input
13	PS	Power save H: Stand-by L: Movement
14	VCC	
15	AMP OUT	Amplifire output
16	AMP IN -	Amplifire input (-)
17	AMP IN +	Amplifire input (+)
18	PCH	Hole amp, AGC phase compareter
19	RCC	Ripple cancel
20	H3 -	Hole signal input
21	H3 +	Hole signal input
22	H2 -	Hole signal input
23	H2 +	Hole signal input
24	H1 -	Hole signal input
25	H1 +	Hole signal input
26	A1H	Pre motor drive output
27	A2H	Pre motor drive output
28	A3H	Pre motor drive output
29	A1	Motor drive output
30	A2	Motor drive output
31	A3	Motor drive output
32	RNF	GND for motor drive

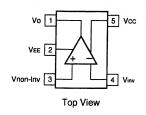


BU4094BCFV-X [ROHM] (8-Stage Shift/Store Register)

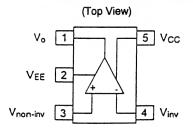




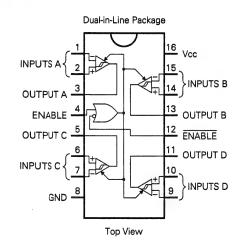
■ CLC450AJM5-X [NATIONAL SEMICON-DUCTOR] (Current Feedback Amplifier)



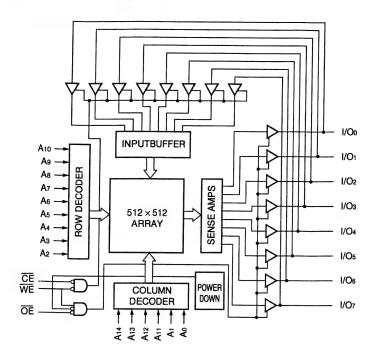
■ CLC452AJM5-X [NATIONAL SEMICON-DUCTORI (Single Supply, Low-Power, High Output, Current Feedback Amplifier)



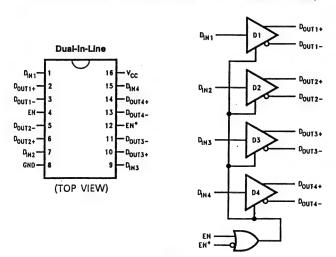
■ DS26C32ATM-X [National Semi Conductor] (Quad Differential Line Receiver)



■ CY62256LL70SN-X [CYPRESS] (32k x 8 Static RAM)

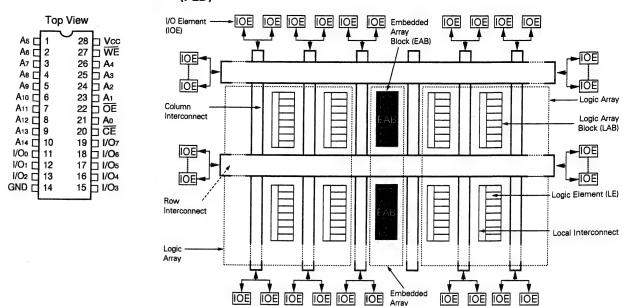


■ DS90LV031TM-X [NATIONAL SEMICONDUCTOR] (3V LVDS Quad CMOS Differential Line Driver)

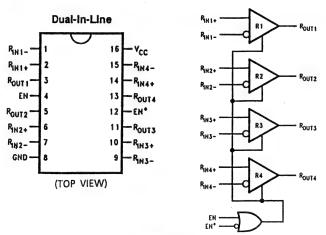


DRIVER							
Enables		Input	Outputs				
EN EN*		DIN	D _{OUT+}	Dout-			
L H		X	Z	Z			
All other combinations		L	L	Н			
of ENABLE inp	outs	н	ш	•			

EPF10K10TC144-4 [ALTERA] (PLD)



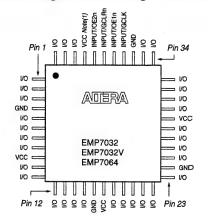
■ DS90LV032TM-X [NATIONAL SEMICONDUCTOR] (3V LVDS Quad CMOS Differential Line Receiver)

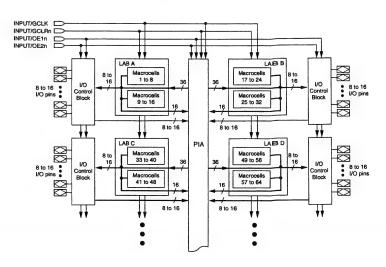


RECEIVER

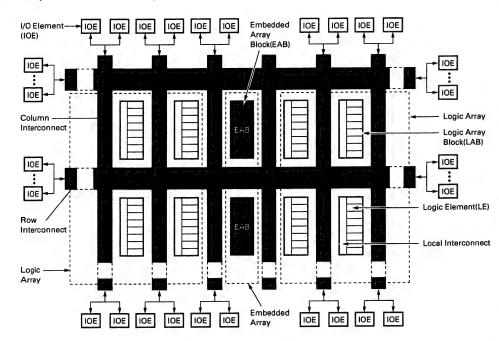
ENABLES		INPUTS	OUTPUT
EN	EN EN'		Rout
L	н	X	Z
All other combi		V _{ID} ≥ 0.1V	Н
of ENABLE inputs		$V_{ID} \leq -0.1V$	L
		Full Failsafe OPEN/SHORT or Terminated	н

EPM032VT-15-001 [ALTERA] (Erasable Programmable Logic Devices)



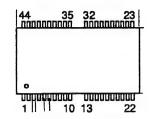


EPF10K20TC144-3 [ALTERA] (PLD CMOS SRAM)



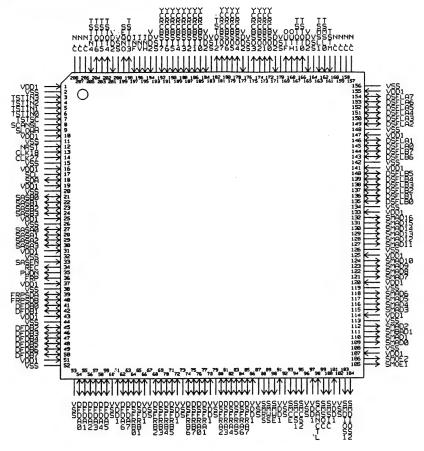
■ HM538254BTT-7 [HITACHI] (256k Word x 8 Bit CMOS Multiport RAM)

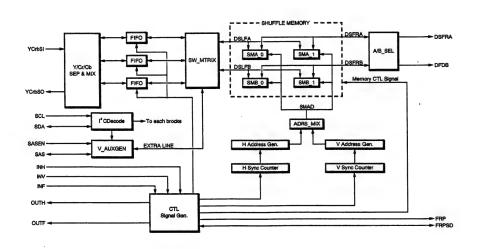
(Top View)



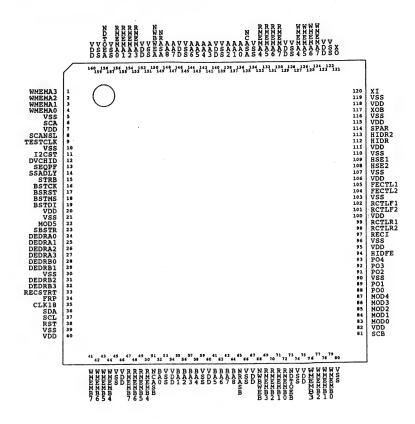
Pin	Pin	name		Pin	Pin name		
Arrange- ment	ange- Supply voltage/		Arrange- ment	Supply voltage/ Clock	Input	Output	
1	VCC			23	VSS		
2	SC			24		A3	
3		SI/	0 0	25		A2	
4		SI	01	26		A1	
5		SI	02	27		A0	
6		SI	O 3	28			QSF
7	DT/OE			29	CAS		
8		1/0	0.0	30	NC		
9		1/0	0.1	31	DSF1		
10		1/0	0.2	32	VSS		
11	NL			33	NL		
12	NL			34	NL		
13		1/0	O 3	35		1/0	0.4
14	VSS			36			0.5
15	WE			37			0.6
16	RAS			38		1/	0.7
17		A8		39	SE		L
18		A7		40			0 4
19		A6		41			O 5
20		A5		42			O 6
21		A4		43		SI	07
22	VCC			44	VSS		

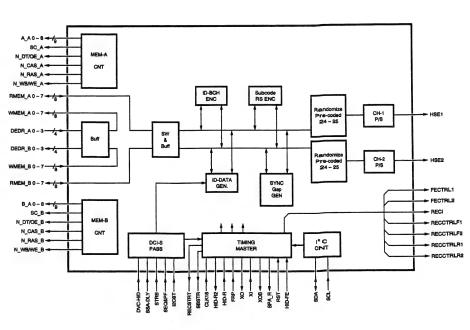
■ JCL0028 [JVC] (Shuffling Memory Control)



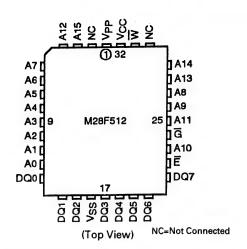


■ JCL0029 [JVC] (Digital Channel Integrated Circuit (DCI) for Recoding)





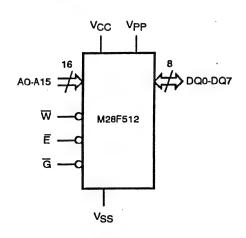
■ PLSC1238 [JVC] PLSC1246 PLSC1256 (512K (64K x 8 Chip Erase) Flash Memory)



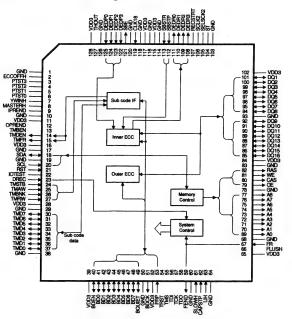
Signal Names

A0 - A15	Address Inputs
DQ0 - DQ7	Data Inputs / Outputs
Ē	Chip Enable
G	Output Enable
₩	Write Enable
Vpp	Program Supply
Vcc	Supply Voltage
Vss	Ground

Logic Diagram



■ L7A1433 [LSI LOGIC] (Error Correcting Codes (ECC))



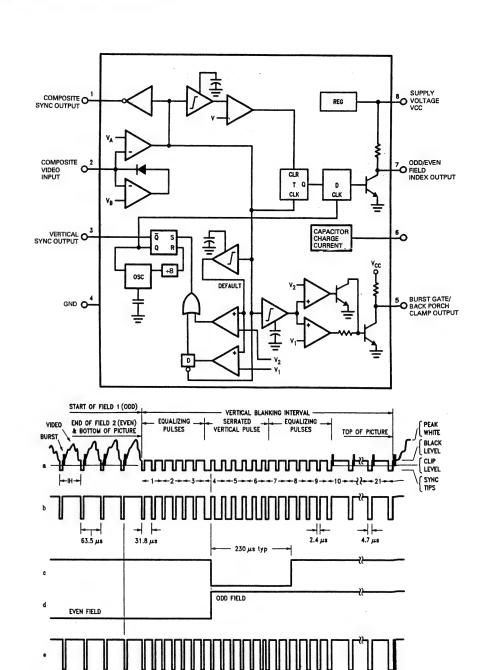
Pin No.	Label	In/Out	Description
1	GND	-	Ground
2	ECCOFFH	-	Not used (Low fixed)
3	PTST3	-	Not used (Low fixed)
4	PTST2		Not used (Low fixed)
5	PTST1	-	Not used (Low fixed)
6	PTST0	-	Not used (Low fixed)
7	TWINH	-	Not used (Low fixed)
8	MASTERH	-	Not used (Low fixed)
9	IPREND	-	Not used (Low fixed)
10	GND	-	Ground
11	VDD3	-	Power supply (+3V)
12	OPREND	-	Not used
13	TMBEN	-	Not used
14	TMDEN	Out	Communication enable of sub code bus
15	TMFR	Out	Frame detect (1st frack: H)
16	VDD3	-	Power supply (+3V)
17	GND	-	Ground
18	SDA	In/Out	Data for IIC
19	GND		Ground
20	sal	In	Clock for IIC
21	RST	in	System reset
22	IOTEST	-	Not used (High fixed)
23	DREC	În	Signal REC: H
24	TMSTB	in	Data strobe of sub code bus
25	TMAW	In	Address strobe of sub code bus
26	TMBNK	in	Bank select
27	TMRW	in	Read/Write of sub code bus (Write: H)
28	VDD3	-	Power supply (+3V)
29	GND	-	Ground
30	TMDT7	In/Out	
31	TMDT6	In/Out	
32	TMDT5	In/Out	
33	TMDT4	In/Out	Adderss and data of sub code bus
34	TMDT3	In/Out	
35	TMDT2	In/Out	
36	TMDT1	In/Out	
37	TMOTO	In/Out	
38	GND	-	Ground
30	VDD3	-	Power supply (+3V)
40	BDEN	In/Out	DV bus data enable
41	BD0	In/Out	
42	BD1	In/Out	DV bus data (9 MHz/8 bit)
43	BD2	In/Out	
44	000		

54	FRIP		rrame puise
	TRST	-	•
55	TMS	-	
		+	
56	TDI	<u> </u>	-
57	тск	-	-
58	TDO	-	
59			F
	FEND	Out	Frame end pulse for slow and still
60	GND	-	Ground
61	SLOWH	In	Slow mode flag (Slow mode: H)
62	CAPSTP	In	
			Capstan stop flag (Capstan stop mode: H)
63	LIH	In	interval slow or linear slow flag (Linear slow mode: H)
64	GND	-	Ground
65	VD03		
		-	Power supply (+3V)
66	FLUSH	-	Data transition pulse for field advance (Not used)
67	FR	in	Capstan foward/reverse (REV: H)
68	GND	-	Ground
69	AO	Out	
			(A0: LSB)
70	A1	Out	
71	A2	Out	
72	A3	Out	
	+		
73	A4	Out	Memory address (9 MHz)
74	A5	Out	
75	A6	Out	1
76	A7	Out	1
77	A8	Out	(A8: MSB)
78	GND	-	Ground
79	OE	Out	
			Memory output enable (active: L)
80	CAS	Out	Memory column address strobe
81	WE	Out	Memory write enable (active: L)
82	RAS	Out	
		Out	Memory row address strobe
83	GND	-	Ground
84	VDD3	-	Power supply (+3V)
85	DQ16	in/Out	(DQ16: MSB)
86	DQ15	in/Out	Memory data (16 bit)
87	DQ14	In/Out	
88	DQ13	In/Out	
89			
	DQ12	In/Out	
90	DQ11	In/Out	Memory data (16 bit)
91	DQ10	In/Out	
92	DQ9	In/Out	
93	GND	-	Ground
94	DQ8	In/Out	
95	DQ7	In/Out	
96	DQ6	In/Out	Memory data (16 bit)
97	DQ6	In/Out	
98	DQ4	In/Out	
20			
99-	DQ3	In/Out	
99-			
	DQ3	In/Out In/Out	(DO1: LSB)
100	DQ3 DQ2 DQ1	In/Out In/Out In/Out	(DQ1: LSB)
100 101 102	DQ3 DQ2 DQ1 VDD3	In/Out In/Out	Power supply (+3V)
100 101 102 103	DQ3 DQ2 DQ1 VD03 GND	In/Out In/Out In/Out	
100 101 102	DQ3 DQ2 DQ1 VDD3	In/Out In/Out In/Out	Power supply (+3V) Ground
100 101 102 103 104	DQ3 DQ2 DQ1 VD03 GND ST	In/Out In/Out In/Out - -	Power supply (+3V) Ground Not used (Low fixed)
100 101 102 103 104 105	DQ3 DQ2 DQ1 VD03 GND ST SELSCK2	In/Out In/Out In/Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed)
100 101 102 103 104 105 106	DQ3 DQ2 DQ1 VD03 GND ST SELSCK2 SCLK2	In/Out In/Out In/Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed)
100 101 102 103 104 105 106 107	DQ3 DQ2 DQ1 VD03 GND ST SELSCK2 SCLK2 RECSTRT	In/Out In/Out In/Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed)
100 101 102 103 104 105 106	DQ3 DQ2 DQ1 VD03 GND ST SELSCK2 SCLK2	In/Out In/Out In/Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed)
100 101 102 103 104 105 106 107	DQ3 DQ2 DQ1 VD03 GND ST SELSCK2 SCLK2 RECSTRT DEDRS	In/Out In/Out In/Out In Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pute (DEDRS: MSB)
100 101 102 103 104 105 106 107 108	DG3 DG2 DG1 VD03 GND ST SELSCK2 SCLIC2 RECSTRIT DEDR3 DEDR2	In/Out In/Out In/Out In Out Out	Power supply (+3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start putse
100 101 102 103 104 105 106 107 108 109	DG3 DG2 DG1 VDD3 GND ST SELSCK2 SCUC2 RECSTRT DEDR3 DEDR3 DEDR3 DEDR3	In/Out In/Out In/Out In Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDRS: MSB) REC data to DCI (9 MHz/4 bit)
100 101 102 103 104 105 106 107 108	DG3 DG2 DG1 VD03 GND ST SELSCK2 SCLIC2 RECSTRIT DEDR3 DEDR2	In/Out In/Out In/Out In Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDRS: MSB) REC data to DCI (9 MHz/4 bit)
100 101 102 103 104 105 106 107 108 109	DG3 DG2 DG1 VDD3 GND ST SELSCK2 SCUC2 RECSTRT DEDR3 DEDR3 DEDR3 DEDR3	In/Out Out Out	Power supply (-3V) Ground Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDRS: MSS) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB)
100 101 102 103 104 105 106 107 108 109 119 111 111	DQ3 DQ2 DQ1 VYDQ3 GND ST SELSCK2 SCUK2 RECSTRT DEDR3 DEDR1 DEDR1 DEDR1 DEDR0 SBSTP	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEPAS: MSB) REC data to DCI (9 MHz/4 bit) (DEDRO: LSB) Sync. block start pulse (PB)
100 101 102 103 104 105 106 107 108 109 110 111 111 112	DGS DG2 DG1 VD03 ST SELSCK2 SCLK2 RECSTRT DEDR3 DEDR1 DEDR1 DEDR1 SBSTP SBSTR	In/Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start putse (ICEORS: MSB) REC data to DCI (9 MHz/4 bit) (ICEORO: LSB) Sync. block start putse (PB) Sync. block start putse (REC)
100 101 102 103 104 105 106 107 108 109 119 111 111	DQ3 DQ2 DQ1 VYDQ3 GND ST SELSCK2 SCUK2 RECSTRT DEDR3 DEDR1 DEDR1 DEDR1 DEDR0 SBSTP	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEPAS: MSB) REC data to DCI (9 MHz/4 bit) (DEDRO: LSB) Sync. block start pulse (PB)
100 101 102 103 104 105 106 107 108 109 110 111 111 112	DGS DG2 DG1 VD03 ST SELSCK2 SCLK2 RECSTRT DEDR3 DEDR1 DEDR1 DEDR1 SBSTP SBSTR	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDR3: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (PB) Sync. block start pulse (REC)
100 101 102 103 104 105 106 107 108 109 119 111 111 112 113 114	DQ3 DQ2 DQ1 VD03 GND SELSCK2 SCLU2 RECSTRT DEDR3 DEDR2 DEDR1 DEDR0 SBSTP SBSTR GND VD03	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDRS: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V)
100 101 102 103 104 105 106 107 108 107 108 119 111 112 113 114 115 116	DCS DC2 DC1 VVDC3 GND ST SELSCN2 SCLN2 RECSTRT DEDRA DEDRA DEDRA DEDRA SBSSTTP GND	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start putse (ICEDRS: MSB) REC data to DCI (9 MH-2/4 bit) (ICEDRO: LSB) Sync. block start putse (PB) Sync. block start putse (REC) Ground Power supply (-3V) Ground
100 101 102 103 104 105 106 107 108 109 110 111 111 112 113 114 115 116 117	DOS DOS DOS DOS DOS GND ST SELSCK2 SCLV2 SCLV2 DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS GND DEDNS G	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDRS: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V)
100 101 102 103 104 105 106 107 108 107 108 119 111 112 113 114 115 116	DCS DC2 DC1 VVDC3 GND ST SELSCN2 SCLN2 RECSTRT DEDRA DEDRA DEDRA DEDRA SBSSTTP GND	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start putse (ICEDRS: MSB) REC data to DCI (9 MH-2/4 bit) (ICEDRO: LSB) Sync. block start putse (PB) Sync. block start putse (REC) Ground Power supply (-3V) Ground
100 101 102 103 104 105 106 107 108 109 119 111 111 113 114 115 115 117 118	DOS DOS DOS DOS DOS GND ST SELSCK2 SCLU2 RECSTRT DEDRA DEDRA DEDRA DEDRA DEDRA SBSTP SSSTP SSSTP SSSTP GND GND GND GND GND GND	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In In Out Out Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDRS: MSB) REC data to DCI (9 MHz/4 bit) (DEDRG: LSB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground Power supply (-3V) Ground
100 101 102 103 104 105 106 107 108 109 119 111 111 115 116 117 118 118	DOS DOS DOS DOS DOS DOS ST SELSONS SELSONS DEDNS	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out Out Out	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Rec track star pulse (ICEORS: MSB) REC data to DCI (9 MHz/4 bit) (ICEORS: MSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground Power supply (-3V) Ground System clock input (18 MHz) from CLK OSC IC (IC401)
100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 118 119 120	DOS DOS DOS DOS GND ST SELSCK2 SCLV2 SCLV2 DEDRS	In/Out In/Out In/Out In/Out In/Out In/Out In In Out Out Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDR3: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground Power supply (-3V) Ground System block input (18 MHz) from CLK OSC IC (IC401) Ground
100 101 102 103 104 105 106 107 108 109 119 111 111 115 116 117 118 118	DOS DOS DOS DOS DOS DOS ST SELSONS SELSONS DEDNS	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In In Out Out Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Rec track star pulse (ICEORS: MSB) REC data to DCI (9 MHz/4 bit) (ICEORS: MSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground Power supply (-3V) Ground System clock input (18 MHz) from CLK OSC IC (IC401)
100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 118 119 120	DOS DOS DOS DOS GND ST SELSCK2 SCLV2 SCLV2 DEDRS	In/Out In/Out In/Out In/Out In/Out In/Out In/Out In/Out Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDRS: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground System clock input (18 MHz) from CLK OSC IC (IC401) Ground System clock input (18 MHz) from CLK OSC IC (IC401) Sync block error
100 101 102 103 104 105 106 107 108 109 119 111 112 113 114 115 118 119 120 121	DOS DOS DOS DOS DOS GAND ST SELSOK2 SCU2 SCU2 DEDRS DEDRS DEDRS DEDRS DEDRS GAND CUCKTB GA	In/Out In/Out In/Out In/Out In/Out Out Out In Out Out In Out Out In Out Out In In Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start putse (ICEDRS: MSB) REC data to DCI (9 MH-2/4 bit) (ICEDRO: LSB) Sync. block start putse (PB) Sync. block start putse (REC) Ground Power supply (-3V) Ground Power supply (-3V) Ground System clock input (18 MH-2) from CLK OSC IC (IC401) Ground Sync block error (ICEDRS: MSB)
100 101 102 102 103 104 106 107 108 109 119 111 111 111 114 115 117 118 119 120 121	DOS DOS DOS DOS GND DOS GND ST SELSCK2 SCLK2 SCLK2 DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS GND GND CLCK18 GND VDOS GND CLCK18 GND CLCK18 GND DEDRS	In/Out In/Out In/Out In/Out In/Out In/Out Out In Out Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDRS: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground System clock input (18 MHz) from CLK OSC IC (IC401) Ground System clock input (18 MHz) from CLK OSC IC (IC401) Sync block error
100 101 102 102 103 104 105 106 107 108 109 119 111 111 111 111 111 118 119 121 122 122	DOS DOS DOS DOS DOS GND ST SELSCK2 SCLIZ RECSTRT DEDRS DEDRS DEDRS DEDRS GND GND CLK18 GND CLK18 GND SSE DEDRS GND CLK18 GND CLK18 GND CLK18 GND CLK18 COM CND	In/Out In/Out In/Out In/Out In/Out Out Out In Out Out In Out Out In Out Out In In Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDR3: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground Synes dock input (18 MHz) from CLK OSC IC (IC401) Ground Synes block error (DEDR3: MSB) PB data from DCI (0MHz/4 bit)
100 101 102 102 103 104 105 106 107 108 109 119 111 111 111 111 111 118 119 121 122 122	DOS DOS DOS DOS GND DOS GND ST SELSCK2 SCLK2 SCLK2 DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS GND GND CLCK18 GND VDOS GND CLCK18 GND CLCK18 GND DEDRS	In/Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start pulse (DEDR3: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground Synes dock input (18 MHz) from CLK OSC IC (IC401) Ground Synes block error (DEDR3: MSB) PB data from DCI (0MHz/4 bit)
100 101 102 103 104 105 106 107 108 1109 1109 1110 1111 1111 1115 1116 1119 122 123 122 123	DOS DOS DOS DOS DOS DOS DOS ST SELSONS SELSONS DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS GND CLK18 GND DEDNS DEDNS DEDNS GND DEDNS D	In/Out In/Out In/Out In/Out In/Out In/Out Out In Out Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start putse (ICEDRS: MSB) REC data to DCI (9 MHz/4 bit) (ICEDRO: LSB) Sync. block start putse (PB) Sync. block start putse (PEC) Ground Power supply (-3V) Ground System clock input (18 MHz) from CLK OSC IC (IC401)
100 101 102 103 104 105 105 106 107 108 109 110 111 112 113 114 115 118 119 120 121 122 122 122 122 125	DOS DOS DOS DOS DOS GND DOS ST SELSCK2 SCLV2 RECOSTRT DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS DEDRS GND CULT CULT GND	In/Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track star pulse (DEDR3: MSB) REC data to DCI (9 MHz/4 bit) (DEDR0: LSB) Sync. block start pulse (PB) Sync. block start pulse (REC) Ground Power supply (-3V) Ground Power supply (-3V) Ground Sync fixed fi
100 101 102 103 104 105 106 107 108 1109 1109 1110 1111 1111 1115 1116 1119 122 123 122 123	DOS DOS DOS DOS DOS DOS DOS ST SELSONS SELSONS DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS DEDNS GND CLK18 GND DEDNS DEDNS DEDNS GND DEDNS D	In/Out In	Power supply (-3V) Ground Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) Not used (Low fixed) REC track start putse (ICEDRS: MSB) REC data to DCI (9 MHz/4 bit) (ICEDRO: LSB) Sync. block start putse (PB) Sync. block start putse (PEC) Ground Power supply (-3V) Ground System clock input (18 MHz) from CLK OSC IC (IC401)

in/Out DV bus data (9 MHz/8 bit)

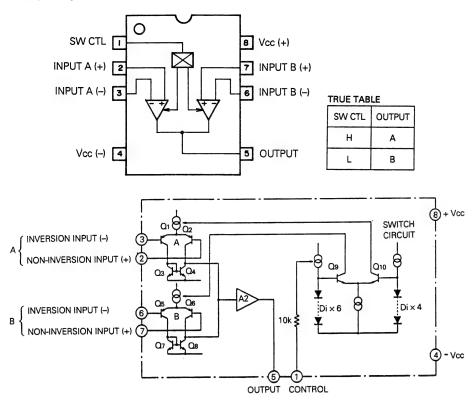
In/Out In/Out DV bus busy Ground Out DV bus data clock (9 MHz)

LM1881M-X [National Semiconductor] (Video Sync Separator)

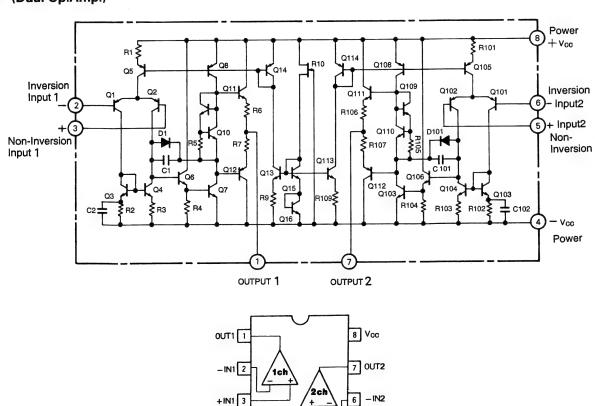


(a) Composite Video; (b) Composite Sync; (c) Vertical Output Pus Ise; (d) Odd/Even Field Index; (e) Burst Gate/Back Porch Clamp

M5201FP-X [MITSUBISHI] (Switch Op Amp.)



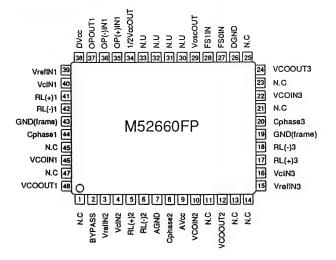
M5218AFP-X [MITSUBISHI] (Dual Op.Amp.)

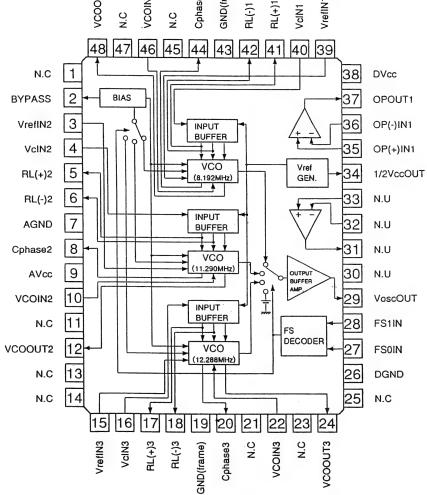


+ IN2

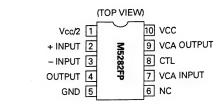
VEE 4

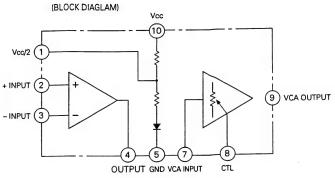
M52660FP [MITSUBISHI] (3 Channel VCO)



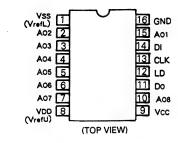


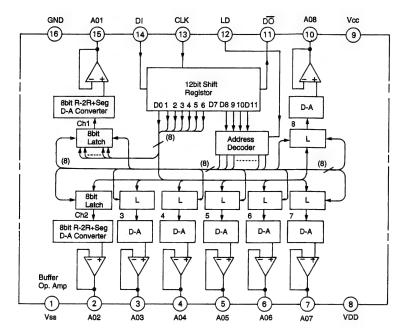
M5282FP-X [MITSUBISHI] (VCA and Op Amp.)



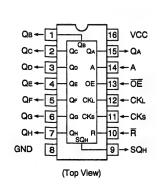


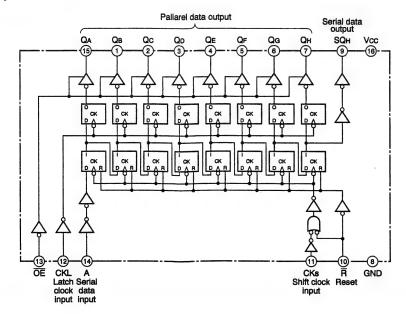
M62353GP-X [MITSUBISHI] (8-Bit 8-Channel D/A Converter)



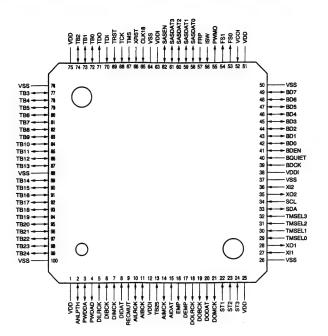


M66312FP-W [MITSUBISHI] (8 Bit LED Driver with Shift Register and Latched 3-State Outputs)

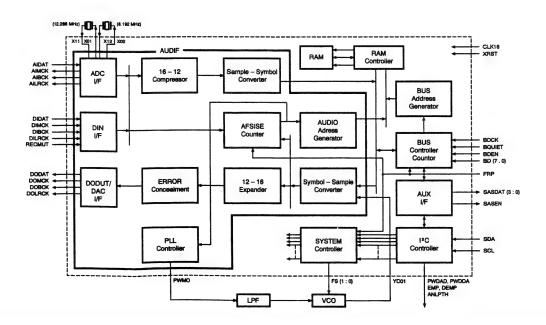




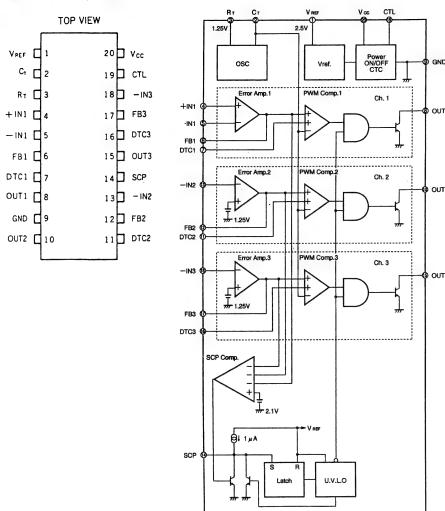
M65401FP [MITSUBISHI] (Digital Signal Processor for Audio Signal)



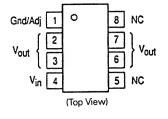
Pin Number	Pin Name	Function	1/0	Pin Number	Pin Name	Function	VO
1	VDD	Outer Power	-	51	VDD	Outer Power	-
2	ANLPTH	Analog loop through(H:through)	В	52	VCOI	VCO clock input for PLL	
3	PWDDA	Power down for DAC(L:power down)	В	53	FS[0]	Fs select for VCO	0
4	PWDÁD	Power down for ADC(L:power down)	0	54	FS[1]	Fs select for VCO	0
5	DILRCK	L/R clock from Digital in	1	55	PWMO	Phase comparator output of PLL	0
6	DIBCK	Bit clock from Digital In	1	56	ISW	1mA or 4mA Change Control ("H"4mA,"L"1mA)	1
7	DIMCK	Master clock from Digital in	T	57	FRP	Frame Start from Shuffling	1
8	DIDAT	Serial Data from Digital in	T	58	SASDAT[0]	Line Data to/from Shuffling	В
9	RECMUT	Rec Data Mute	1	59	SASDAT[1]	Line Data to/from Shuffling	В
10	AILRCK	L/R clock for ADC	В	60	SASDAT[2]	Line Data to/from Shuffling	В
11	AIBCK	Bit clock for ADC	В	61	SASDAT[3]	Line Data to/from Shuffling	В
12	VDDI	Inner Power	-	62	SASEN	Line Data Enable to Shuffling	8
13	TB[25]	Test Bus	1	63	VDDI	Inner Power	T- I
14	AIMCK	Master clk for ADC(256 · fs)	0	84	VSS	GND	T-1
15	AIDAT	Serial Data from ADC	1	65	CLK18	Master clock (18MHz)	\Box
16	EMP	ADC emphasis control	0	66	XRST	Reset (L:reset)	\Box
17	DEMP	DAC De-emphasis control	0	87	TMS	Boundary Scan Test (Test Mode Select)	11
18	DOLRCK	L/R clock for DAC/D-OUT	0	68	TCK	Boundary Scan Test (Test Clock)	11
19	DOBCK	Bit clock for DAC/D-OUT	0	69	TRST	Boundary Scan Test (Test Reset)	
20	DODAT	Serial Data for DAC/D-OUT	0	70	TDI	Boundary Scan Test (Test Data Input)	
21	DOMCK	Master clock for DAC/D-OUT(256 • fs)	0	71	TDO	Boundary Scan Test (Test Data Output)	0
22	ST1	Scan Test Mode Select(Lenable)	1	72	TB(0)	Test Bus	В
23	ST2	Scan Test Clock	1	73	TB[1]	Test Bus	В
24	ST3	Scan Test Data Input	1	74	TB[2]	Test Bus	В
25	VDD	Outer Power	-	75	VDD	Outer Power	-
26	VSS	GND	-	76	VSS	GND	1-1
27	XII	12.288MHz X'tai port(48kHz)	1	77	TB(3)	Test Bus	В
28	XO1	12.288MHz X'tai port(48kHz)	0	78	TB[4]	Test Bus	В
29	TMSEL[0]	Test Mode Select	Ť	79	TB[5]	Test Bus	В
30	TMSEL[1]	Test Mode Select	i	80	TB(6)	Test Bus	В
31	TMSEL[2]	Test Mode Select	1	81	TB(7)	Test Bus	В
32	TMSEL(3)	Test Mode Select	H	82	TB(8)	Test Bus	В
33	SDA	I2C data line	В	83	TB(9)	Test Bus	В
34	SCL	I2C clock line	Ť	84	TB(10)	Test Bus	В
35	XO2	8.192MHz X'tai port(32kHz)	0	85	TB[11]	Test Bus	В
36	XI2	8.192MHz X'tal port(32kHz)	Ť	86	TB[12]	Test Bus	В
37	VSS	GND	-	87	TB[13]	Test Bus	В
38	VDDI	Inner Power	-	88	VSS	GND	1-1
39	BDCK	DVC bus clock	H	89	TB(14)	Test Bus	В
40	BQUIET	DVC bus control	H	90	TB(15)	Test Bus	В
41	BDEN	DVC bus enable	В	91	TB[16]	Test Bus	В
42	BD[0]	DVC bus data	В	92	TB[17]	Test Bus	В
43	BD(1)	DVC bus data	В	93	TB(18)	Test Bus	В
44	BD[2]	DVC bus data	В	94	TB[19]	Test Bus	В
45	BD(3)	DVC bus data	Б	95	TB[20]	Test Bus	В
46	BD(4)	DVC bus data	В	96	TB(21)	Test Bus	В
47	BD(5)	DVC bus data	В	97	TB[22]	Test Bus	В
48	BD[6]	DVC bus data	В	98	TB[23]	Test Bus	В
49	BD[7]	DVC bus data	В	99	TB[24]	Test Bus	В
50	VSS	GND	-	100	VSS	GND	+=
50	V55	GNU		100	V00	GNU	1



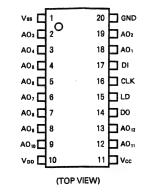
MB3782PF-X [FUJITSU] (Switching Regulator Controller)

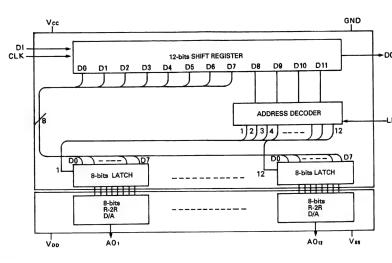


MC33269DR2-3.3 [MOTOROLA] (Regulator)



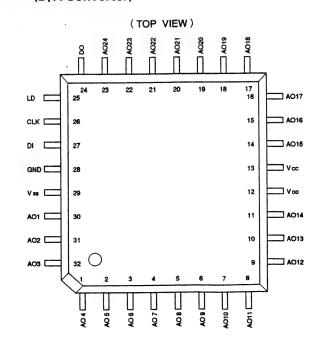
MB88341PFV-X [FUJITSU] (D/A Converter)

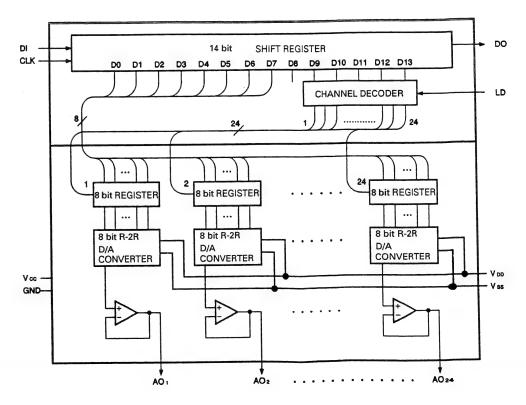




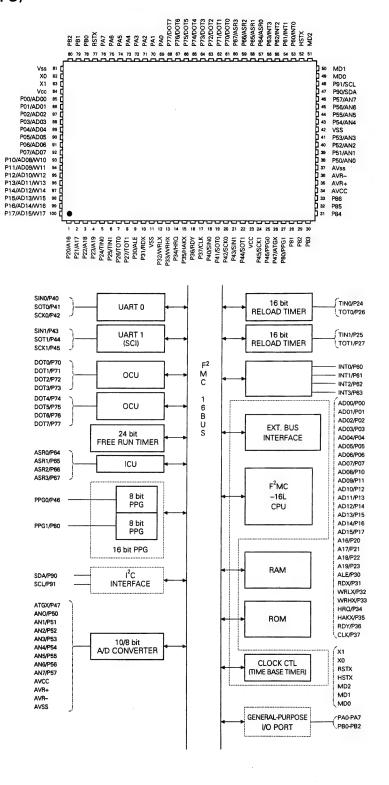
Cumbal	Pin No.	1/0	Function	
Symbol	MB88341		1 dilottori	
DI	17	1	For serial data (12 bits) input.	
DO	14	0	For MSB data output of 12-bit shift register.	
CLK	16	ı	For shift clock input. Signal from DI pin is input to 12-bit shift register.	
LD	15	1	With "H" input to LD pin, data of 12-bit shift register is loaded to decoder and D/A output register.	
AO1 AO2 AO3 AO4 AO5 AO6 AO7 AO8 AO9 AO10 AO11 AO12	18 19 2 3 4 5 6 7 8 9 12	0	For 8-bits D/A output.	
Vcc	11	_	Power source of MCU interface.	
GND	20	_	GND of MCU interface	
VDD	10	_	Power source of D/A converter.	
Vss	1	_	GND of D/A converter.	

MB88345PF [FUJITSU] (D/A Converter)

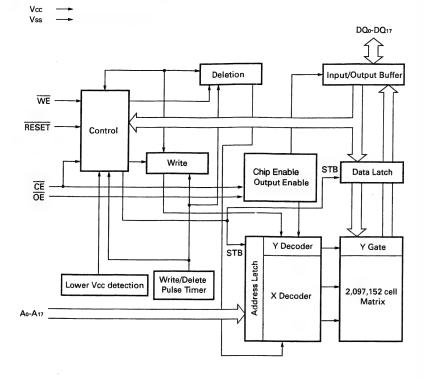




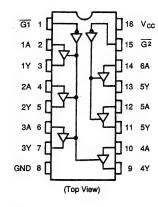
MB90T678BPF [MITSUBISHI] (CPU)



PLSC1234 [JVC] (2M Bit Flash Memory)



MC74HC367F-X [MOTOROLA] (Hex Bus Drivers With 3-State NON-Inverted Output)

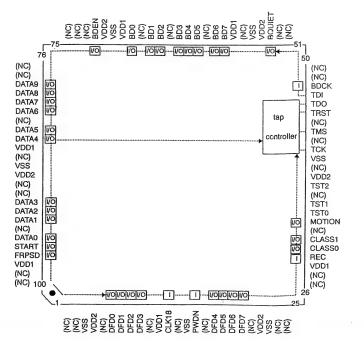


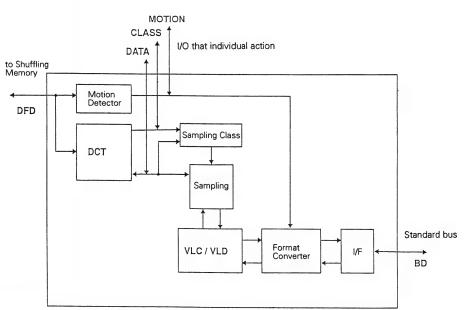
TRUE Table

INP	UTS	OUT	OUTPUTS		
G	An	Y(367A)	Y (368A)		
L	L	L	н		
L	Н	Н	L		
Н	х	Z	Z		

X:DON'T CARE Z:HIGH IMPEDANCE

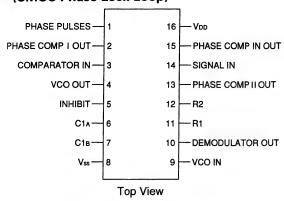
MN673711 [MATSUSHITA] (Video Compression/Decompression LSI)

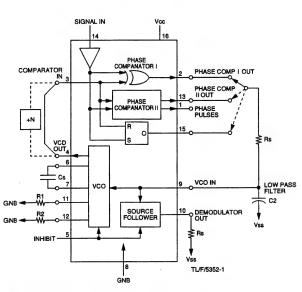




4-84

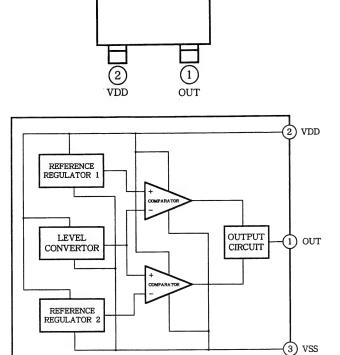
MC74HC4046AF-X [MOTOROLA] (CMOS Phase Lock Loop)



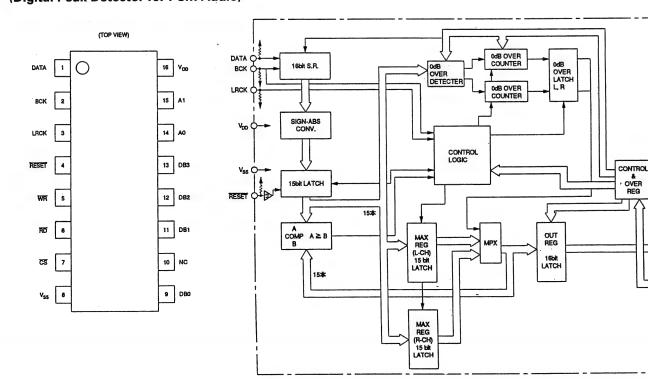


MN12821-QR-X [MATSUSHITA] (Voltage Detecter)

VSS

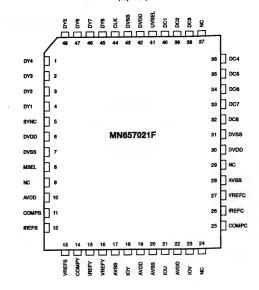


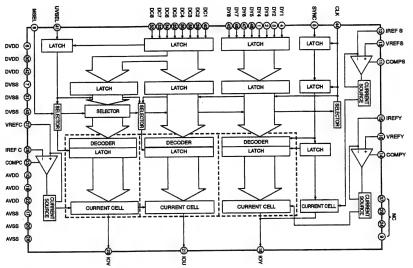
MSM6338MS-K-X [OKI] (Digital Peak Detector for PCM Audio)



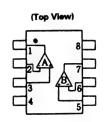
MN657021F [MATSUSHITA] (8 Bit 3ch D/A Converter)

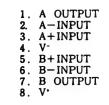
(Top View)

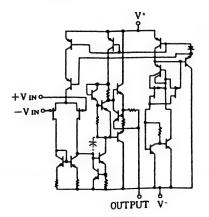




NJM062M-X [JRC] (J-FET Input Op.Amp.)





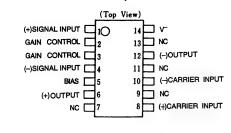


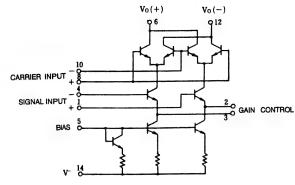
NJM1496V-X [JRC] (Balanced Modulator)

NJM2068M-D-X [JRC]

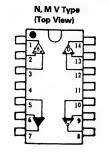
(Dual Low-Noise Op.Amp.)

(Top View)



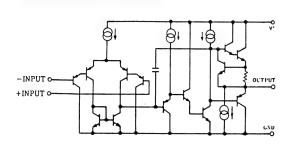


NJM2902M-X [JRC] (Quad Single Supply Op.Amp.)

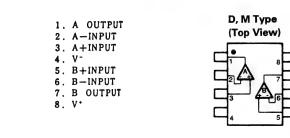


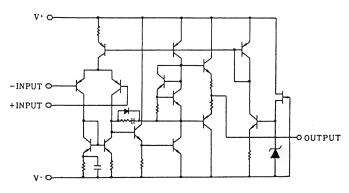
Pin Assignment 1 .A OUTPUT 8 .C OUTPUT 2 .A - INPUT 9 .C - INPUT 3 .A + INPUT 10 .C + INPUT 4 .V* 11 .GROUND 5 .B + INPUT 12 .D + INPUT 6 .B - INPUT 13 .D - INPUT 7 .B OUTPUT 14 .D OUTPUT

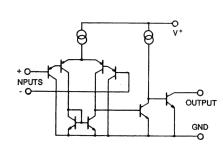
■ Equivalent Circuit (4 circuits in a chip)



NJM2903V-X [JRC] (Dual Single Supply Comparator)







Pin Assignment

1 . A OUTPUT

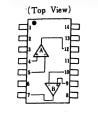
2. A-INPUT 3. A+INPUT 4. GND

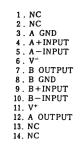
4. GND 5. B+INPUT 6. B-INPUT 7. B OUTPUT 8. V

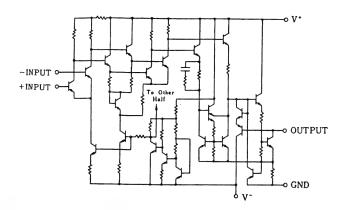
■ NJM2068V-X [JRC]

(See NJM2068M-D-X.)

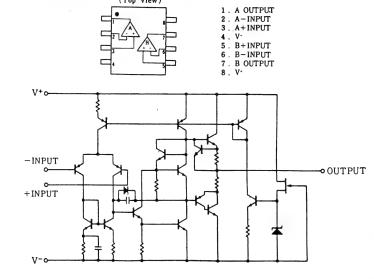
NJM319M-X [JRC] (Voltage Comparator)



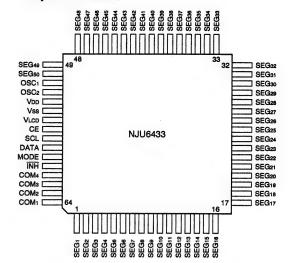




NJM4556AM-X [JRC] (Dual High Current Op.Amp.)

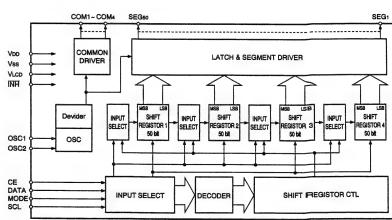


NJU6433FB2 [JRC] (1/4 Duty LCD Driver)

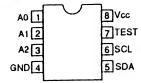


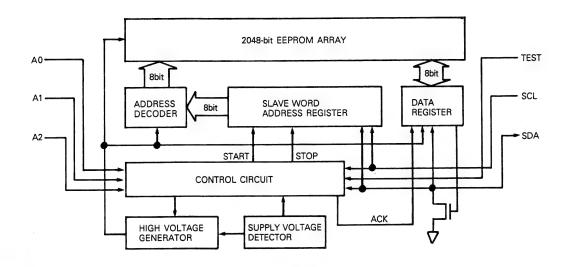
(TOP VIEW)

No.	Symbol	Function
1~50	SEG1~SEG50	Segment output for LCD driver
51	OSC1	0004
52	OSC2	OSC terminal
53	VDD	
54	VSS	GND
55	VLCD	Power source for LCD drive
56	CE	H level : Data input
		Drop-down edge : Data latch
		L level : Disable
57	SCL	Clock input for serial data trancefar.
58	DATA	Serial data input.
59	MODE	H level : Mode seting
		L level : Data input for LCD display
60	INH	L level : LCD is not display
		H level : LCD is display
61~64	COM4~COM1	Common output for LCD drive.

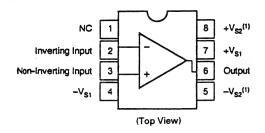


NM24C02EM8-X [ROHM] (IIC Bus 2k Serial EEPROM)

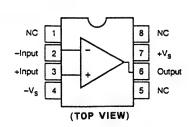




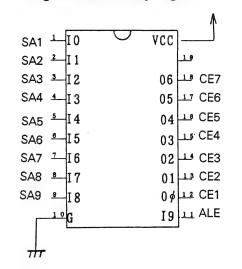
OPA655U-XE [BBJ] (Op.Amplifier)



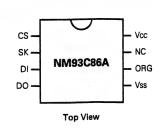
OPA658U-XE [BBJ] (Op.Amplifier)



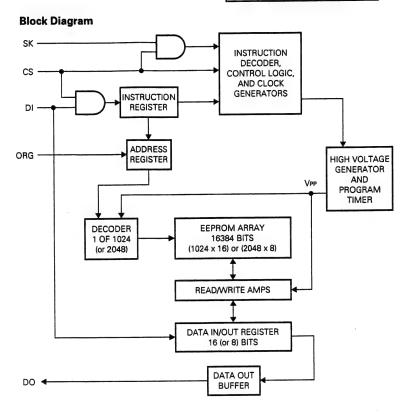
P16V8Z-25-01 [ADVANCED MICRO DE-VICES] (Programmable Array Logic)



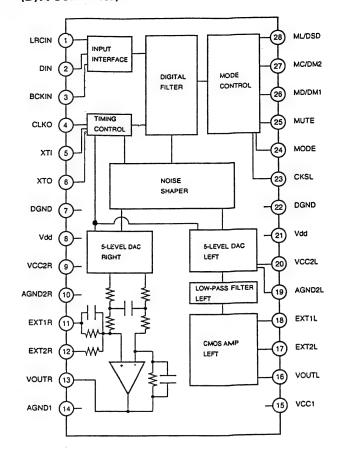
NM93C86AEM8-X [NATIONAL SEMICONDUCTOR] (16,384-Bit Serial Interface, Standard Voltage CMOS EEPROM)



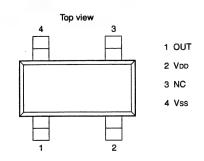
r III I I I I I I I I I I I I I I I I I					
Pin	Description				
CS	Chip Select				
SK	Serial Data Clock				
DI	Serial Data Input				
DO	Serial Data Output				
VSS	Ground				
ORG	Memory Organization Select (On the NM93C86A)				
NC	No Connect				
VCC	Positive Power Supply				

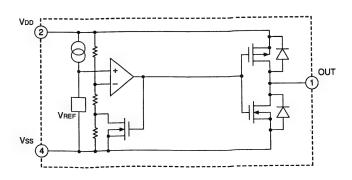


PCM1710U/G/-XE [BAR BRAWN] (D/A Converter)

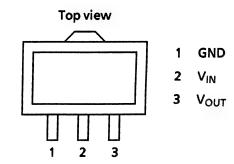


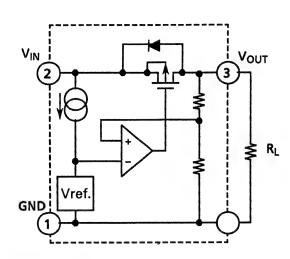
S-80840ANNP-W [SEIKO] (Precision Voltage Detector)





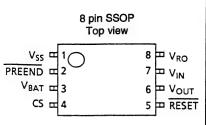
S-81224SGUP-X [SEIKO] (Voltage Regulator(2.4V))



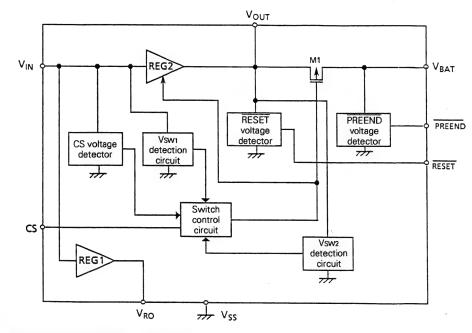


- S-81233SGUP-X [SEIKO] (See S-81224SGUP-X.)
- S-81240SGUP-X [SEIKO] (See S-81224SGUP-X.)
- S-81250SGUP-X [SEIKO] (See S-81224SGUP-X.)

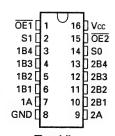
S-8423LFS-X [SEIKO] (Battery Back-up Selector)



	Pin name	Description			
	cs	Output terminal for CS voltage detector			
	RESET Output terminal for RESET voltage detection				
	PREEND	Output terminal for PREEND voltage detector			
	Vin*	Input terminal for main power supply			
	VBAT*	Power input terminal for backup			
Ŧ	Vour*	Output terminal for voltage regulator 2			
'	Vro*	Output terminal for voltage regulator 1			
	Vss	GND			



SN74CBT3253PW-X [TEXAS] (2 Circuit 4 Bit-1 Bit FET Multiplexer/Demultiplexer)

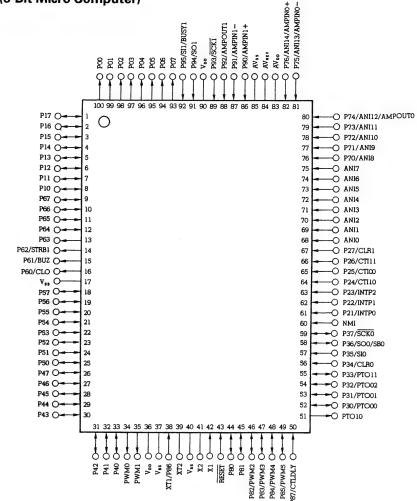


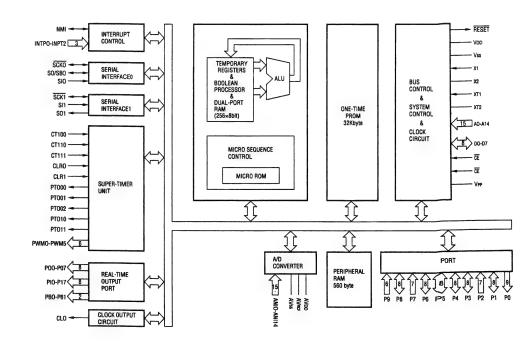
Top View

S1	S0	OE1	OE2	FUNCTION
Х	Х	Х	Н	Disconnect 1A
Χ	X	н	×	Disconnect 2A
L	L	L	L	1A to 1B1 and 2A to 2B1
L	н	L	L	1A to 1B2 and 2A to 2B2
Н	L	L	L	1A to 1B3 and 2A to 2B3
Н	Н	L	L	1A to 1B4 and 2A to 2B4

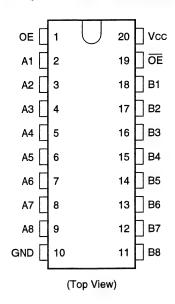
H:High Level L:Low Level X:Dont Care

SC78148GF-XXX [JVC] (8-Bit Micro Computer)



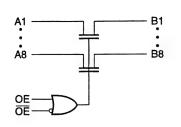


■ SN74CBT3345PW-X [TEXAS] (8 Bit Cross Bar Switch)

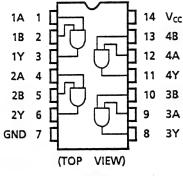


Inp	uts	Inputs/Outputs
OE	ŌĒ	A, B
Х	L	A=B
Н	X	A=B
L	Н	Z

- H: High Level
- L : Low Level
- X : Don't Care
- Z: High Impedance

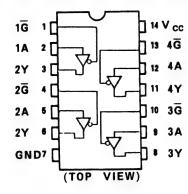


SN74LV08APW-X [TEXAS] (Quad 2-Input AND Gates)



RUE Table					
Α	В	Υ			
L	L	L			
L	н	L			
Н	L	L			
н	Н	Н			

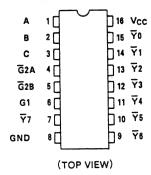
SN74LV125APW-X [TEXAS] (Quad Bus Buffer Gates With 3-State Outputs)



TC74HC	125 A	TRUE Table
INP	UTS	OUTPUTS
G	Α	Υ
Н	Х	Z
L	L	L
L	Н	Н

- : Don't Care
- : High Impedance

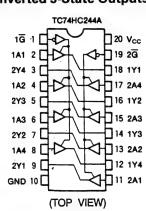
SN74LV138APW-X [TEXAS] (3-Line to 8-Line Decoders/Demultiplexers)



TRUE Table

		OUTPUTS							INPUTS						
SELECTED OUTPUT									г	SELECT			ENABLE		
	₹7	₹6	∀ 5	Ÿ 4	₹3	¥2	₹1	Ψo	Α	В	С	G2B	G2A	G1	
NONE	н	н	н	Н	н	н	н	н	Х	х	х	х	х	L	
NONE	н	н	н	Н	н	н	Н	Н	х	х	Х	х	н	х	
NONE	н	н	н	Н	н	Н	н	Н	Х	х	Х	н	Х	X	
Ϋ́0	Н	Н	н	н	н	н	Н	L	L	L	L	L	L	н	
Ÿ1	н	н	н	н	н	н	L	н	Н	L	L	L	L	н	
Y2	н	Н	н	н	н	L	н	н	L	н	L	L	L	н	
Ÿ3	Н	н	н	н	L	н	н	н	н	н	L	L	L	н	
¥4	н	Н	н	L	Н	н	н	н	L	L	н	L	L	н	
Ÿ6	н	Н	L	Н	н	н	Н	н	Н	L	н	L	L	н	
Ÿ6	н	L	н	н	н	н	н	н	L	н	Н	L	L	н	
¥7	L	Н	н	Н	Н	Н	н	н	н	Н	н	L	L	н	

SN74LV244APW-X [TEXAS] (Octal Buffers AND Line Drivers With **NON-Inverted 3-State Outputs)**

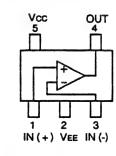


TRUE Table

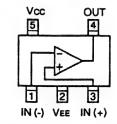
1	INP	OUTPUTS				
	G	An	Ÿn			
	L	L	L			
	L	Н	Н			
	Н	Х	Z			

X : Don't Care : High Impedance

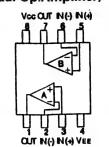
TA75S01F-X [TOSHIBA] (Single Op.Amp.)



TA75S393F-W [TOSHIBA] (Single Conparator)



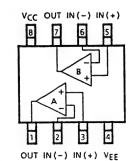
■ TA75W01FU-X [TOSHIBA] (Dual Op.Amplifier)



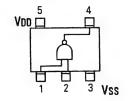
■ TA75W393FU-X [TOSHIBA]

(Top View)

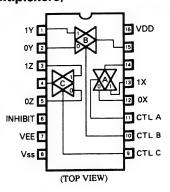
(Dual Conparater)



TC4S11F-X [TOSHIBA] (2 Input Single NAND Gate)



TC4053BFT-X [TOSHIBA] (Triple 2 Channel Analog Multiplexers/ Demultiplexers)



TRUTH TABLE

COI	NTROL	"ON" CHANNEL				
INHIBIT	С	В	A	4053BP 4053BF		
		 	 			
L	L	L	L	0X, OY, 0Z		
L	L	L	Н	1X, 0Y,0Z		
L	L	н	L	0X, 1Y, 0Z		
L	L	н	Н	1X, 1Y, 0Z		
L	Н	L	L	0X, 0Y, 1Z		
L	Н	L	Н	1X, 0Y, 1Z		
L	Н	Н	L	0X, 1Y, 1Z		
L	Н	Н	Н	1X, 1Y, 1Z		
Н		*	*	NOTE		
* Don't Care,						

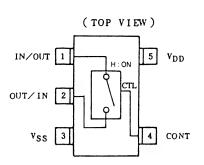
TC4S30F-W [TOSHIBA] (Single Exclusive OR Gate)

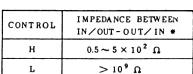


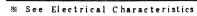
TRUE TABLE

INF	PUT	OUTPUT
Α	В	X
L	L	L
L	н	Н
Н	L	н
Н	Н	L
	ł	i e

TC4S66F-X [TOSHIBA] (Bilateral Switch)







■ TC4S69F-X [TOSHIBA]

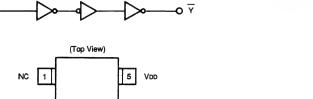
(Inverter Gate)

IN 2

Vss 3

■ TC4W66FU-X [TOSHIBA] (Analog Switch)

OUT/IN

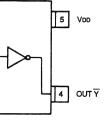


 $X = A \cdot B$

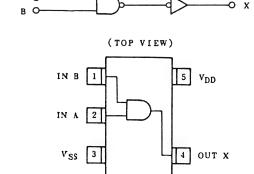
IN/OUT O

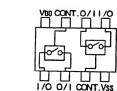
CONTROL O

 v_{SS}

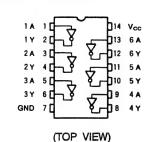


TC4S81F-X [TOSHIBA] (2-Input AND Gate)

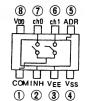




TC74HC04AF-X [TOSHIBA] (Hex Inverters)



TC4W53F-X [TOSHIBA] (2-Channel Multiplexer)



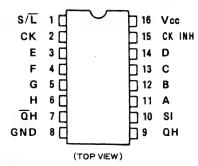
TRUE TA	BLE	
CON	TROL JT	10
INH	ADR	

INPUT		ON CHANNEL
INH	ADR	
L	L	ch0
L	Н	ch1
Н	*	NONE

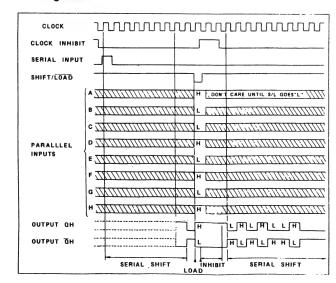
*Don't care

TC4W53FU-X [TOSHIBA] (See TC4W53F-X.)

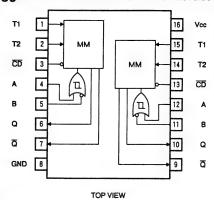
■ TC74HC165AF-X [TOSHIBA] (8-Bit Serial or Parallel-In/Serial Out Shift **Registers With Complementary Out)**



Timing chart



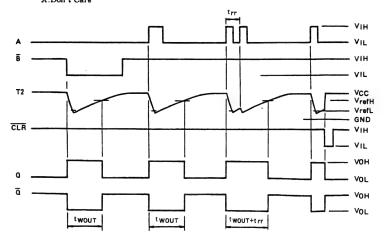
■ TC74HC4538AFS-X [TOSHIBA] (Dual Retriggerable Monostable Multivibrator)



TRUE Table

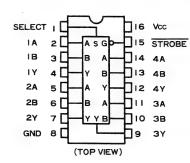
	INPUT		OUTPUT		NOTE	
A	B	CD	Q	Q	NOTE	
	н	н	7	7	OUTPUT ENABLE	
х	L	н	L	н	INHIBIT	
H	х	H	L	Н	INHIBIT	
L .	T_	н	<u></u>	7	OUTPUT ENABLE	
X.	X	L	L	н	INHIBIT	

X:Don't Care



■ TC74VHC08FT-X [TOSHIBA] (See SN74LV08APW-X.)

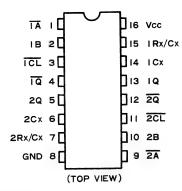
■ TC74VHC157FT-X [TOSHIBA] (Quad 2-Line to 1-Line Data Selectors/ **Multiplexers, NON-Inverted Data Outputs)**



TRUE Table INPUTS OUTPUT STROBE SELECT Α Х L L L Х L Ļ н Н L н Х L Х Н

X:DON'T CARE

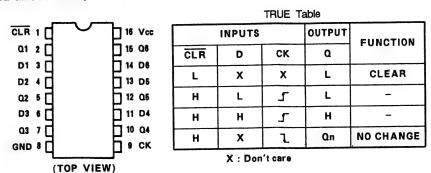
■ TC74VHC123AFT-X [TOSHIBA] (Dual Retriggerable Monostable Multivibrators)

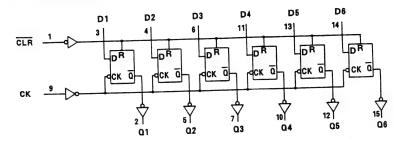


TRUE Table

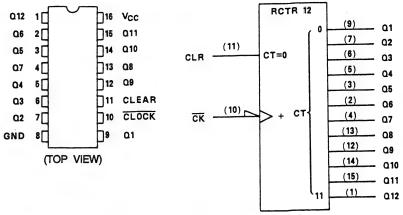
	INPUTS		OUTF	PUTS	NOTE
Ā	В	ŌL	Q	Q	NOTE
-L	Н	Н	几	T	OUTPUT ENABLE
х	L	н	L	н	INHIBIT
Н	х	Н	L	Н	INHIBIT
L	<u>-</u>	Н	几	J	OUTPUT ENABLE
L	Н		几	J	OUTPUT ENABLE
Х	х	L	L	н	INHIBIT

TC74VHC174FT-X [TOSHIBA] (HEX D-Type Flip Flop With Common Clock and direct Clear)





■ TC74VHC4040FT-X [TOSHIBA] (Synchronous 12-Bit Binary Ripple Counters)

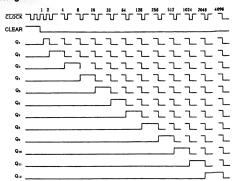


TRUTH TABLE

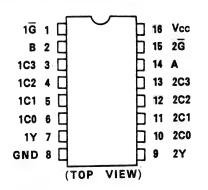
CLOCK	CLEAR	OUTPUT STATE
X	Н	ALL OUTPUTS = "L"
5	L	NO CHANGE
~L	L	ADVANCE TO NEXT STATE

X ; Don't care

Timing chart



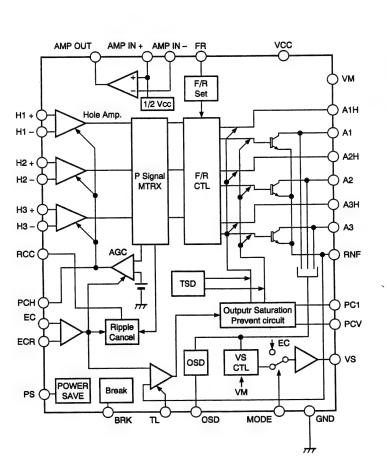
TC74VHC153FT-X [TOSHIBA] (Dual 4-Channel Multiplexer)



TRUTH TABLE

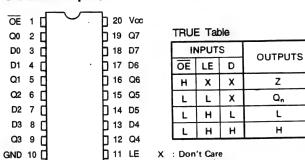
SELECT		t	DATA INPUTS				OUTP	UT Y
В	A	CO	C1	C2	C3	G	HC153A	HC253A
X	X ·	X	. X	X	X	H	L	Z
L	L	L	X	X	X	L	L	L
L	L	Н	X	X	X	L	Н	Н
L	Н	X	L	X	X	L	L	L
L	Н	X	Н	X	X	L	Н	Н
Н	L	X	X	L	Х	L	L	L
H	L	X	X	Н	X	L	Н	Н
Н	Н	X	X	X	L	L	L	L
Н	H	X	X	X	H	L	Н	Н

X : Don't care Z : Hi impedance

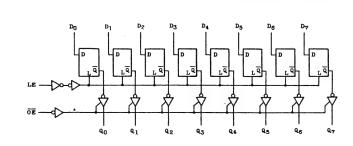


■ TC74VHC373FT-X [TOSHIBA] (Octal D-Type Latch With NON-Inverted 3-State Output)

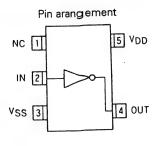
(Top View)



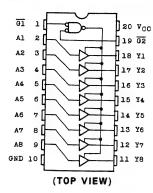
Z : Hi impedance
On : Q output level before the LE become "L".



■ TC7S04F-X [TOSHIBA] (Invertor)



TC74VHC541FT-X [TOSHIBA] (Octal Bus Buffer With Inverted 3-State Outputs)



TRUE Table

		ОИТРИТ		
-	G1	G2	Α	Υ
	L	L	Н	Н
	L	L	L	L
	Н	X	Х	Z
	X	Н	X	Z

TC74VHC573FT-X [TOSHIBA] (Octal D-Type Latch With NON-Inverted 3-State Outputs)

ŌĒ	11	√	Vcc
D0	2 [19	QO
D1	3 [18	Q1
D2	4 [17	Q2
D3	5 [16	Q3
D4	6 [15	Q4
D5	7 [5 14	Q5
D6	8 [13	Q6
D7	9 🗖	5 12	Q 7
GND	10 🛚	511	LE
	(TOP	VIEW)	

TRUE Table

Inu	THUE TABLE					
II	INPUTS		OUTPUTS			
OE	LE	D	Q			
Н	Х	Х	HZ			
L	L	Х	Qn			
L	Н	L	L			
L	Н	Н	н			

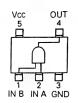
X : Don't care.

: Hi impedance

Qn : Level of Q output before LE becomes "L".

TC74VHCT541AFTX [TOSHIBA] (See TC74VHC541FT-X.)

■ TC7S08F-X [TOSHIBA] (2 Input Single AND Gate)

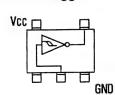


TRUE Table

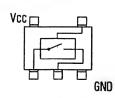
Α	В	Х	
L	L	L	
L	Н	L	
Н	L	L	
Н	Н	Н	

TC7S08FU-X [TOSHIBA] (See TC7S08F-X.)

TC7S14FU-X [TOSHIBA] (Schmitt trigger)



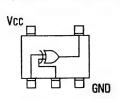
TC7S66FU-X [TOSHIBA] (Analog SW)



TC7SH04FU-X [TOSHIBA] (See TC7S04F-X.)

TC7SH08FU-X [TOSHIBA] (See TC7S08F-X.)

■ TC7SH86FU-X [TOSHIBA] (Single Exclusive OR Gate)



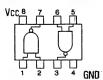
TC7SU04FU-X [TOSHIBA] (See TC7S04F-X.)

■ TC7SH32FU-X [TOSHIBA] (2 Input Single OR Gate)





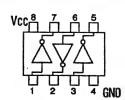
TC7W00FU-X [TOSHIBA] (2 Input Dual NAND Gate)



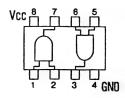
TRUE Table

Α	В	Х
L	L	Н
L	Н	Н
Н	L	Н
Н	Н	L

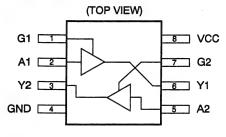
TC7W04FU-X [TOSHIBA] (Triple Inverter Gate)



TC7W08FU-X [TOSHIBA]
(2 Input Dual AND Gate)



TC7W126FU-X [TOSHIBA] (Dual Bus Buffer)



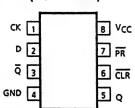
Truth Table

INP	UTS	OUTPUTS			
G	Α	Υ			
L	X	Z			
Н	L	L			
н н		Н			

X : Don't Cate Z : High Impedance

■ TC7W74FU-X [TOSHIBA] (D-type Flip-Flop)

(TOP VIEW)



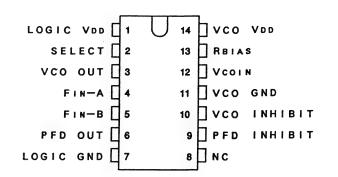
PR (7) S (5) Q
CK (1) C
D (2) D
CLR (6) R

TRUE Table

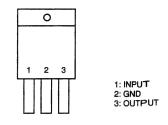
	INP	UTS		OUT	PUTS	F1111 (FF1 0 11
CLR	PR	D	CK	Q	Q	FUNCTION
L	Н	×	×	L	Н	CLEAR
Н	٦	×	×	Н	L	PRESET
L	٦	×	×	Н	Н	_
Н	Ι	L	7	L	Н	_
Н	Ι	Н		Н	L	_
Н	H	×	1	Qn	Qn	NO CHANGE

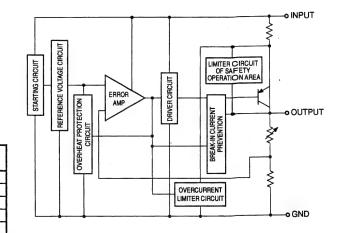
× : Don't care

TLC2932IPW [TEXAS] (PLL)

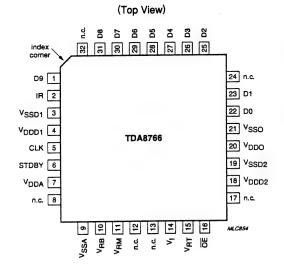


UPC29M05T-X [NEC] (Voltage Regulator)





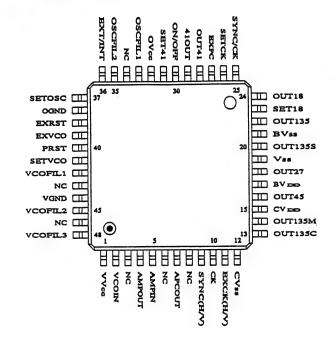
■ TDA8766G/C1 [PHILIPS] (10 Bit High-Speed 2.7 to 5.25V Analog-to-Digital Converter)

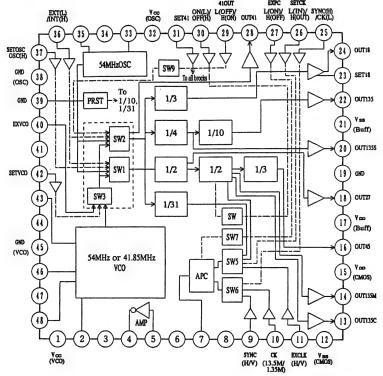


SYMBOL	PIN	DESCRIPTION
D9	1	data output; bit 9 (MSB)
IR	2	in range data output
V _{SSD1}	3	digital ground 1
V _{DDD1}	4	digital supply voltage 1 (2.7 to 5.25 V)
CLK	5	clock input
STDBY	6	standby mode input
V _{DDA}	7	analog supply voltage (2.7 to 5.25 V)
n.c.	8	not connected
VSSA	9	analog ground
V _{RB}	10	reference voltage BOTTOM input
V _{RM}	11	reference voltage MIDDLE
n.c.	12	not connected
n.c.	13	not connected
Vı	14	analog input voltage
V _{RT}	15	reference voltage TOP input
ŌĒ	16	output enable input
n.c.	17	not connected

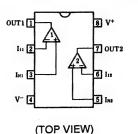
SYMBOL	PIN	DESCRIPTION
V _{DDD2}	18	digital supply voltage 2 (2.7 to 5.25 V)
V _{SSD2}	19	digital ground 2
V _{DDO}	20	positive supply voltage for output stage (2.5 to 5.25 V)
V _{SSO}	21	digital output ground
D0	22	data output; bit 0 (LSB)
D1	23	data output; bit 1
n.c.	24	not connected
D2	25	data output; bit 2
D3	26	data output; bit 3
D4	27	data output; bit 4
D5	28	data output; bit 5
D6	29	data output; bit 6
D7	30	data output; bit 7
D8	31	data output; bit 8
n.c.	32	not connected

UPC2384GA [NEC] (Digital VTR PLL)

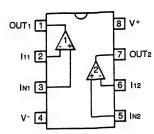




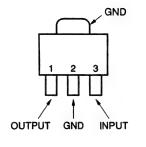
■ UPC4082G2-X [NEC] (J-FET Input Dual Op-Amplifire)

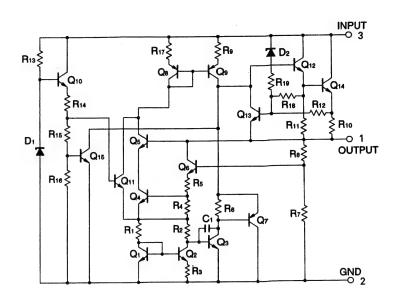


■ UPC812G2-X [NEC] (Op.Amp.)

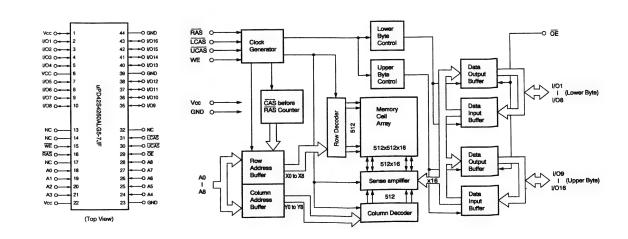


■ UPC78L05T-X [NEC] (Regulator)

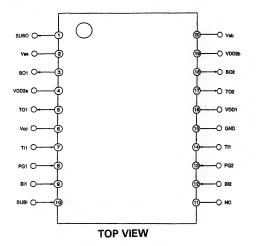




■ UPD42S4260ALG5 [NEC] (3.3V 4M Bit Dynamic RAM)

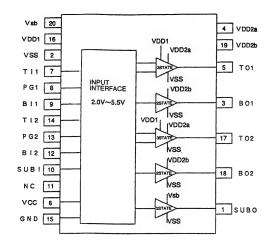


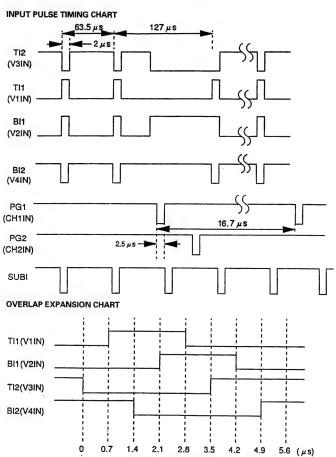
■ UPD16510GR-X [NEC] (Level Shifter)



	INP	UT		OUTPUT		
T I 1, 2	PG	B I 1.2	SUBI	TO1, 2	BO1, 2	SUBO
L	н	-	-	VNa	-	-
н	н		-	VL	_	-
L	L	-	-	VH	-	-
н	L	-	-	VL	-	1
-	-	L	-	-	VMb	-
-	-	Н	-	1	VL	-
-	-	-	L			VL
-	_	-	н			VHH

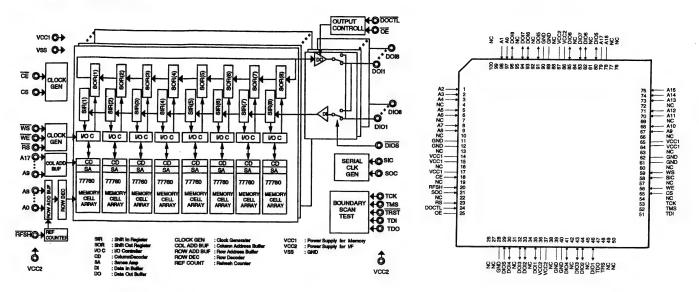
(VL=VSS, VHa=V0D2a, VHb=VDD2b, VH=VDD1, VHH=Vsb)





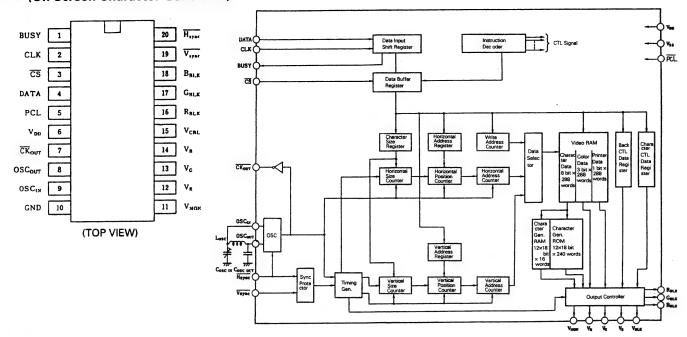
INPUT WAVE FORM

UPD489001 [NEC] (5M Bit Field Buffer)

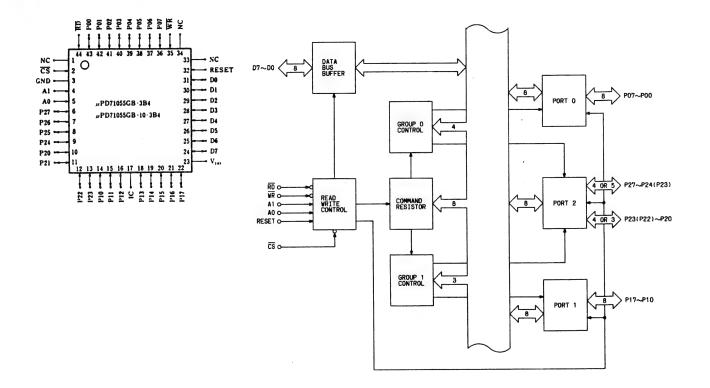


Pin No.	Label	In/Out	Description	Pin No.	Label	In/Out	Description
1	A2	in		51	TDI	-	-
2	A3	In	Shuffle memory address (18 MHz, 18 bit)	52	TMS	-	-
3	A4	in		53	TCK	-	•
4	NC	-	Not used	54	NC	-	Not used
5	A5	In		55	cs	-	High fixed
6	A6	In	Shuffle memory address (18 MHz, 18 bit)	56	WE	in	Write enable from SHUFFLE IC
7	NC	-	Not used .	57	NC	-	Not used
8	A7	In		58	SIC	In	Clock input (18 MHz)
9	A8	In	Shuffle memory address (18 MHz, 18 bit)	59	ws	in	Shuffle memory control write strobe
10	NC	-	Not used	60	NC	-	Not used
11	GND	1 -		61	GND	-	
12	GND	<u> </u>	Ground	62	GND	-	Ground
13	NC	+=	Not used	63	NC		Not used
14	VCC1	+ -	THU USES	64	VCC1	-	1707 0000
15	VCC1	+ :-	Power supply (+3 V)	65	VCC1	-	Power supply (+3 V)
16	NC	+ :	Metunad	66	NC	+-	Not used
17	VCC1	+-	Not used	67	A9	in	ITAL MOON
18	CE	- In	Chuite managable anable	68	A10	In	Shuffle memory address (18 MHz, 18 bit)
19	NC	+	Shuffle memory chip enable	69	NC	-	Not used
20	RFSH	<u> </u>	Not used	70	A11	- In	Not used
21	SOC	-		71	A12	-	Shuffle memory address (18 MHz, 18 bit)
22	NC NC	In	Clock input (18 MHz) from CLK OSC IC	72	NC NC	in	
		<u> </u>	Not used			-	Not used
23	RS	in	Shuffle memory read strobe	73	A13	In	
	DOCTL	In	Shuffle memory data output control	74	A14	In	Shuffle memory address (18 MHz, 18 bit)
25	OE	-	Low fixed	75	A15	In	
26	NC	-	Not used	76	NC	-	Not used
27	NC	-	Not used	77	NC	-	Not used
28	GND	-	Ground	78	A16	In	Shuffle memory address (18 MHz, 18 bit)
29	DIOS	In	Shuffle memory data I/O select	79	A17	In	
30	D014	In/Out	Shuffle memory data (8 bit)	80	DIO5	In/Out	Shuffle memory data (8 bit)
31	NC	-	Not used	81	NC	-	Not used
32	DOI3	In/Out	Shuffle memory data (8 bit)	82	DIO6	In/Out	Shuffle memory data (8 bit)
33	DOI2	In/Out	(0.00)	83	DIO7	In/Out	
34	NC	-	Not used	84	NC	-	Not used
35	DOI1	In/Out	Shuffle memory data (8 bit)	85	DIO8	In/Out	Shuffle memory data (8 bit)
36	ACC5	-	Power supply (+3 V)	86	VCC2	-	Power supply (+3 V)
37	VCC2	-	· one adapta (40 4)	87	ACCS	-	. Since Supply (TO 1)
36	NC	-	Not used	88	NC	-	Not used
39	GND	-	Ground	89	GND	-	
40	GND	-	OTOMIC .	90	GND	-	Ground
41	DIO4	In/Out	Shuffle memory data (8 bit)	91	DOI5	In/Out	Shuffle memory data (8 bit)
42	NC	-	Not used	92	NC	-	Not used
43	DIOS	In/Out		93	DOI6	In/Out	
44	DIO2	In/Out	Shuffle memory data (8 bit)	94	DOI7	In/Out	Shuffle memory data (8 bit)
45	NC	-	Not used	95	NC	-	Not used
46	DIO1	In/Out	Shuffle memory data (8 bit)	96	DOIS	In/Out	Shuffle memory data (8 bit)
47	TDO		and monthly data to day	97	AO	to	Shuffle memory address (18 MHz, 18 bit)
48	TRS	-		96	A1	ln	- accept the man accept to the second
49	NC	-	Not used	99	NC	-	Not used
	NC	-	Not used	100	NC		
30	irec.		ITAN MEGU	100	III	-	Not used

■ UPD6453GT-101 [NEC] (On Screen Charactor Generator)



■ UPD71055GB-10 [NEC] (Parallel Input/Output Port)

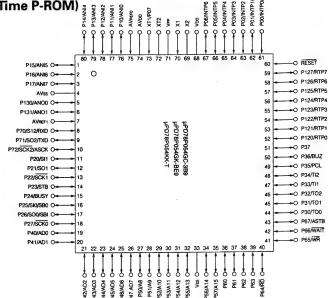


PLSC1237 [JVC]

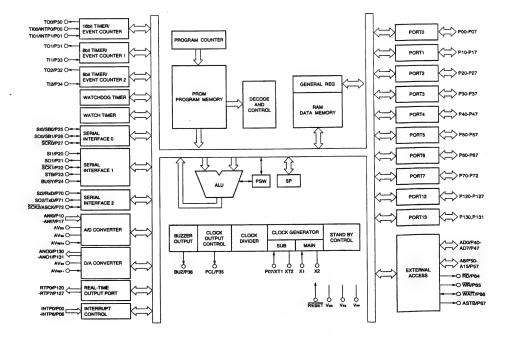
PLSC1262 PLSC1263

TO0-TO2

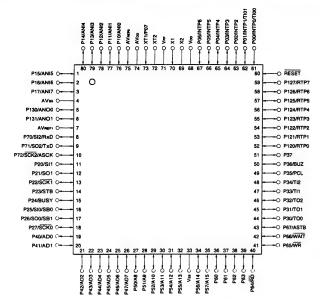
(8 Bit Single Chip Microcomputer with 32k Byte One Time P-ROM) * \$\frac{2}{3} \frac{7}{2} \frac{7}{2}



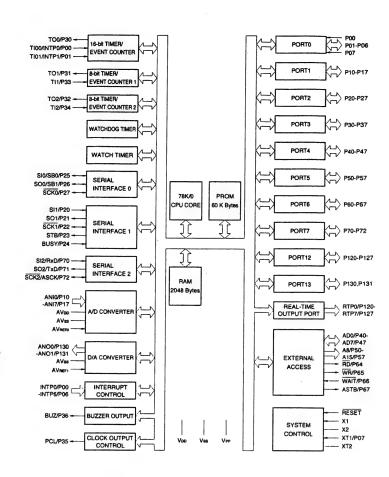
P00-P07	: Port0	SB0, SB1	:	Serial Bus	WAIT	: Wait
P10-P17	: Port1	SI0-SI2	:	Serial Input	ASTB	: Address Strobe
P20-P27	: Port2	SO0-SO2	:	Serial Output	X1, X2	: Crystal (Main System Clock
P30-P37	: Port3	SCK0-SCK2	:	Serial Clock	XT1, XT2	: Crystal (Subsystem Clock)
P40-P47	: Port4	RxD	:	Receive Data	RESET	: Reset
P50-P57	: Port5	TxD	:	Transmit Data	ANIO-ANI7	: Analog input
P60-P67	: Port6	ASCK	:	Asynchronous Serial Clock	ANO0, ANO1	: Analog Output
P70-P72	: Port7	PCL	:	Programmable Clock	AVoo	: Analog Power Supply
P120-P127	: Port12	BUZ	:	Buzzer Clock	AVss	: Analog Ground
P130, P131	: Port13	STB	:	Strobe	AVNEFO, 1	: Analog Reference Voltage
RTP0-RTP7	: Real-Time Output Port	BUSY	:	Busy	Voo	: Power Supply
INTPO-INTP6	: Interrupt From Peripherals	ADO-AD7	:	Address/Date Bus	VPP	: Programming Power Supply
TI00, TI01	: Timer Input	A8-A15	:	Address Bus	Vss	: Ground
T14 T10	1 Times board	55		Doed Strobe		



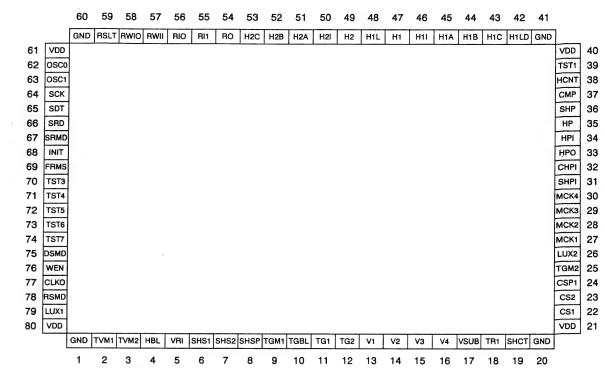
■ PLSC1236 [JVC] (8 Bit Single Chip Microcomputer with 60k Byte One Time P-ROM)



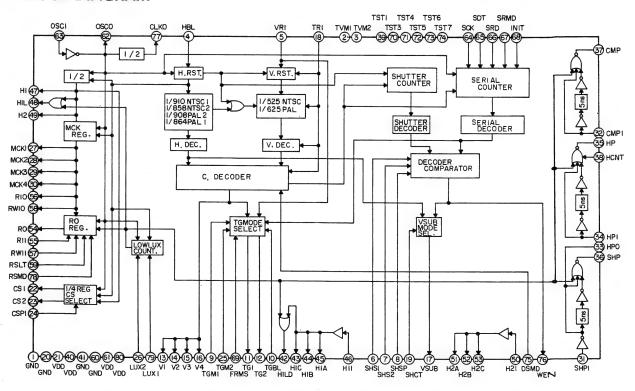
P00-P07	: Port0	SBO, SB1	: Serial Bus	WAIT	: Wait
P10-P17	: Port1	SI0-SI2	: Serial Input	ASTB	: Address Strobe
P20-P27	: Port2	SO0-SO2	: Serial Output	X1, X2	: Crystal (Main System Clock)
P30-P37	: Port3	SCK0-SCK2	: Serial Clock	XT1, XT2	: Crystal (Subsystem Clock)
P40-P47	: Port4	RxD	: Receive Data	RESET	: Reset
P50-P57	: Port5	TxD	: Transmit Data	ANIO-ANI7	: Analog input
P60-P67	: Port6	ASCK	: Asynchronous Serial Clock	ANO0, ANO1	: Analog Output
P70-P72	: Port7	PCL	: Programmable Clock	AVoo	: Analog Power Supply
P120-P127	: Port12	BUZ	: Buzzer Clock	AVss	: Analog Ground
P130, P131	: Port13	STB	: Strobe	AVREFO, 1	: Analog Reference Voltage
RTP0-RTP7	: Real-Time Output Port	BUSY	: Busy	Voo	: Power Supply
	: Interrupt from Peripherals	ADO-AD7	: Address/Data Bus	VPP	: Programming Power Supply
TI00, TI01	: Timer Input	A8-A15	: Address Bus	Vss	: Ground
TI1, TI2	: Tirner Input	RD WA	: Read Strobe		
TO0-TO2	: Timer Output	WR	: Write Strobe		



■ UPD9438BGK-BE9 [NEC] (Timing Generator)



BLOCK DIAGRAM



● Pin function (UPD9438GK)

[Expla	anation of o	column] 	
2	osco	Oscillation output	
		Type of buffer - SU : Schmitt PU : Pull-up PD : Pull-down TR : Tri-state Figure : Output current (mA) Input and/or output - I : Input O : Output Polarity	

		Polarity				•		
No.	Symbol		Description					
1	GND	Grounding						
2	TVM1	TV mode 1		NTCC	NTCC	DAL 2	PAL 1	-
	_	I PD		NTSC 1 1820 FH		1		<u> </u>
3	TVM2	TV mode 2	TVM1	L	Н	L	Н	
	_	I PD	TVM2	L	L	Н	Н Н	
4	HBL	Horizontal B lanking input						
	7 [1 1 1 1			put termina detected.	I to be conne	ected with IF	FHB of SYNC generator.
5	VRI	EXT. vertical SYNC input		-				
	7	1 1 1 1		NC. input ge is dete		be connect	ed with IFVS	SA of sync generator. The
6	SHS1	Shutter speed 1		ge 13 dete				
	0,10,1							1
	-	I PD	SHS2	SHS1	SHSP = L	FIELD SHSP = H	FRAME SHSP = H	
7	SHS2	Shutter speed 2	L	L	1/60	1/60	1/30	·
		I PD	L	H	1/100 1/2000	1/30 1/7.5	1/15 1/3.75	
8	SHSP	Shutter speed setting	Н	н	1/10000	1/3.75	1/1.875	
	_	I PD N	ote: "FR	AME" ex	presses sto	rage time ba	sed on TG2	(pin 12) as the reference.
9	TGM1	Storage Mode 1 •	nput term	ninal for st	tore mode s	etting. Use	this terminal	in combination with ge of this description of
	_		oin functio		IGIVIZ (pin .	25). (Neiei ti	o trie iast pa	ge of this description of
10	TGBL	Transfer gate blanking	N		: f		ttor	
	几					ulti-speed sh Ise at the ris		
11	TG1	Transfer gate pulse 1					· · · · · · · · · · · · · · · · · · ·	is do to the vertical
				ate drive '1). (pin 1:		nster signal	rrom pnotod	iode to the vertical
12	TG2	Transfer gate pulse 2						
				ate drive '3). (pin 1!		nsfer signal	from photod	liode to the vertical
			egister (V	3). (pin 1:	0)			

No.	Symbol	Description						
13	V1	V. transfer pulse 1						
		Vertical transfer register drive pulse						
14	V2	V. transfer pulse 2						
	\prod_{i}	Vertical transfer register drive pulse O 9						
15	V3	V. transfer pulse 3						
		Vertical transfer register drive pulse O 9						
16	V4	V. transfer pulse 4						
		Vertical transfer register drive pulse O 9						
17	VSUB	Board shutter pulse						
	_	Board shutter pulse to operate VOD shutter						
18	TRI	Random shutter function reset mode selection						
		L: Sync reset mode H: Sync non-reset mode						
		PD						
19	SHCT	Shutter control Terminal to control shutter speed of multi-speed shutter.						
	П	When this terminal is used, set the serial shutter to 1/10000. High level stops VSUB (pin 17) output.						
20	GND	Grounding Crounding						
21	VDD	+5 V power supply						
22	CS1	Color sampling pulse 1						
	П	Sampling pulse output for color separation sample holding CSP2 CSP1 CS2						
-		L L MCK1 MCK1						
23	CS2	Color sampling pulse 2 L H MCK2 MCK2 H L MCK3						
	1	O 9 H H MCK4 MCK4						
24	CSP1	Color sampling pulse phase setting 1						
	_	Phases of CS1 (pin 22) and CS2 (pin 23) are settable by this pulse. Phases of CS1 (pin 22) and CS2 (pin 23) are settable by this pulse.						
25	TGM2	Store mode 2 Input terminal for store mode setting. Use this terminal in combination with						
	_	I PD DSMD (pin 75) and TGM1 (pin 9). (Refer to the last page of this description of pin functions.)						
26	LUX2	Low lux mode 2 Low Lux setting terminal 2. L: Corresponding to CDS, H: Corresponding to RDS						
		I PU Refer to the usage example and Lolux mode tables.						
27	MCK1	Main clock 1						
	П	Main clock fck output terminal. Output signal having the same phase as H1 (pin 47).						
28	MCK2	Main clock 2						
		 Main clock fck output terminal. Output signal whose phase is 90° delayed from H1 (pin 47). 						

No.	Symbol		Description				
29	МСКЗ	Main clock 3					
		0 9	 Main clock fck output terminal. Output signal whose phase is 180° delayed from H1 (No. 47). 				
30	MCK4	Main clock 4					
		0 9	 Main clock fck output terminal. Output signal whose phase is 270° delayed from H1 (No. 47). 				
31	SHP1	Sample holding pulse					
	ПІ	I SH	 Input terminal to receive SHP (No. 36) output signal. Input signal is equivalent to main clock. 				
32	CMPI	Clamp pulse input	input organia to main disort.				
	П	I SH	 Input terminal to receive SHP (No. 36) output signal. Input signal is equivalent to main clock. 				
33	HPO	Half pitch output	input digital to equivalent to main dook.				
	Л	0 9	 Output signal approx. 20 ns behind of SHP (No. 36) output. To be connected with HP1 (No. 34) through capacitor and resistor. 				
34	HPI	Half pitch input	To be connected with the timo. 34) through capacitor and resistor.				
54			• Input terminal for fine adjustment of HP (No. 35) output.				
		I SH	To be connected with HPO (No. 33) through capacitor and resistor.				
35	HP	HP Half pitch	Half pitch signal is used as a sampling one.				
		0 9	· · · · · · · · · · · · · · · · · · ·				
36	SHP	Sample holding pulse	-Townstein design				
	几	O 9	• To sample video signal.				
37	CMP	Clamp pulse					
	1	0 9	• To clamp video siganl.				
38	HCNT	Half pitch control					
	_	I SH PD	 To fix HP (No. 35) pulse at High level. L: Normal mode output H: High level fixing output 				
39	TST1	Test pin 1					
	_	I PD	Should be open in general.				
40	VDD	+5 V power supply					
41	GND	Grounding					
42	H1LD	H. final gate transfer pulse for 3-CCD	Horizontal drive pulse output that has High level in horizontal blanking period.				
	П	0 9	 When set to the Lolux mode corresponding to RDS, the central part of drive signal output is taken off. (Refer to the Lolux mode table) 				
43	H1C	H. transfer pulse for 3					
		0 13	Horizontal drive pulse output that has High level in horizontal blanking period				
44	H1B	H. transfer pulse for 3	-CCD				
		0 13	Horizontal drive pulse output that has High level in horizontal blanking period				
45	H1A	H. transfer pulse for 3	. transfer pulse for 3-CCD				
		0 13	Horizontal drive pulse output that has High level in horizontal blanking period				
	IЦ	O 13					

No.	Symbol	Description
46	H11	H. transfer pulse input for 3-CCD
	П	 Input terminal to distribute signal to horizontal transfer pulse terminals for 3-CCD. Connect with H1 (No. 47) for use of 3-CCD camera.
47	H1	H. transfer pulse
	П	Horizontal drive signal output that has High level in horizontal blanking period. Connect with H1I (No. 46) for use of 3-CCD camera.
48	H1L	 H. final gate transfer pulse O 9 Horizontal drive signal output that has High level in horizontal blanking period. When set to the Lolux mode corresponding to RDS, the central part of drive signal output is taken off. (Refer to the Lolux mode table)
49	H2	H. transfer pulse
	П	 Horizontal drive signal output that has Low level in horizontal blanking period. Connect with H2I (No. 50) for use of 3-CCD camera.
50	H2I	H. transfer pulse input for 3-CCD
	П	Input terminal to distribute signal to horizontal transfer pulse terminals for 3-CCD. Connect with H2 (No. 49) for use of 3-CCD camera.
51	H2A	H. transfer pulse for 3-CCD
	П	Horizontal drive signal output that has Low level in horizontal blanking period.
52	H2B	H. transfer pulse for 3-CCD
		Horfzontal drive signal output that has Low level in horizontal blanking period.
53	H2C	H. transfer pulse for 3-CCD
		Horizontal drive signal output that has Low level in horizontal blanking period.
54	RO	H. output reset
	几	O 9 CCD output reset pulse terminal. This pulse is added with DC component and supplied to ØR terminal of CCD.
55	RII	H. output reset timing input
	П	Input terminal to adjust output timing of RO (No. 54) with external input. Active when RSLT (No. 59) has High level. To be connected with RIO (No. 56).
56	RIO	H. output reset timing output
		Output terminal to adjust output timing of RO (No. 54) with external input. To be connected with RII (No. 55).
57	RWII	H. output reset pulse width setting input
	П	I PU SH Input terminal to adjust pulse width of RO (No. 54) with external input. Active when RSLT (No. 59) has High level. To be connected with RWIO (No. 58).
58	RWIO	H. output reset pulse width setting output
	П	O utput terminal to adjust pulse width of RO (No. 54) with external input. To be connected with RWII (No. 57).
59	RSLT	H. output reset switching
		I PD Input terminal to switch setting mode of RO (No. 54) output. L: Internal setting H: External setting
60	GND	Grounding
61	VDD	+5 V power supply
62	osco	Oscillator output
	П	Output terminal of built-in oscillation circuit

No.	Symbol		Description									
63	OSCI	Oscillator input										
			Input terminal of built-in oscillator circuit									
64	SCK	Serial clock										
	П	1	 Clock input terminal for serial interface. Reads in at the pulse rise and inputs 1/4 frequency of original oscillation or lower. 									
65	SDT	Serial data										
			 Data input terminal for serial interface. Input data is positive logic. Sequential reading to start with LSB. 									
66	SRD	Reception enable sign	Enable signal output terminal for serial interface to inform microprocessor whether it is enabled for data reception or disabled.									
		0 9	L : Enabled for data reception H : Disabled for data reception									
67	SRMD	Reception mode swit	 L: Reception is possible only in V. blanking period. When reception does not finish in V. blanking period: Ineffective 									
	_	I PD	H : Reception is always possible.									
68	INIT	Serial reset	By the state of th									
			 L: Disables serial interface from operation, or resets it forcibly (hard resetting). H: Enables serial interface for original operation. 									
69	FRMS	Frame select	1-pixel or 2-pixel read-out field is selectable at a unit of frame.									
		I PD	L: Ist and 2nd fields read-out H: 3rd and 4th fields read-out									
70	TST3	Test pin 3	11. Sid and 4th heids read-out									
	_	I PD	Should be open in general.									
71	TST4	Test pin 4										
	_	I PD	Should be open in general.									
72	TST5	Test pin 5										
	_	I PD	Should be open in general.									
73	TST6	Test pin 6										
	_	I PD	• Should be open in general.									
74	TST7	Test pin 7	Charlitha and is accord									
	_	I PD	Should be open in general.									
75	DSMD	Device mode	6 California - 10 CCD - 20 CCD									
	_	I PD	 Switching terminal for 1/3-CCD or 2/3-CCD. L: Conforming to 1/3-CCD H: Conforming to 2/3-CCD 									
76	WEN	Write enable	Timing pulse output to write data in external memory at slow shutter speed.									
		0 13	 At normal shutter speed, output signal is same with VD. But it becomes 0.5H delayed signal in 2nd field. 									
77	CLKO		- but it becomes 0.311 delayed signal in 211d field.									
77		Clock output O 13	Half divided output of oscillation frequency									
78	RSMD	Switching of H. outp	ut reset pulse polarity									
	_	O PD	 To switch output polarity of RO (No. 54). L: Positive H: Negative 									
79	LUX 1	Low lux mode	Low lux-setting terminal									
'			L: Normal mode H: Lolux mode									
L_		I PD	Refer to the low lux mode table.									
80	VDD	+5 V power supply										

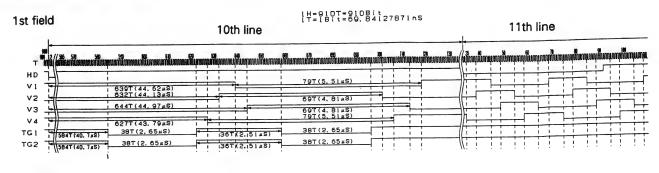
When CCD used and read-out method

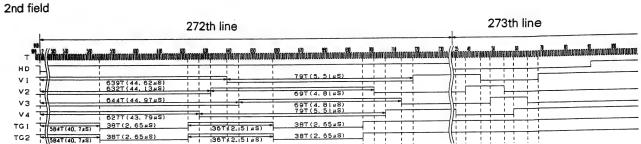
DSMD	TGM2	TGM1	When CCD used	Read-out method
L	L	L	1/3 CCD	Field
L	L	Н	1/3 CCD	Frame
L	Н	L	Inhabit	Inhabit
L	Н	Н	Inhabit	Inhabit
Н	L	L	2/3 CCD	Field
Н	L	Н	2/3 CCD	Frame
Н	Н	L	2/3 CCD	2 pixels
Н	Н	Н	2/3 CCD	1 pixel

• Lolux mode table

LUX2	LUX1	Mode
L	L	Normal
L	Н	CDS
Н	L	Normal
Н	Н	RDS

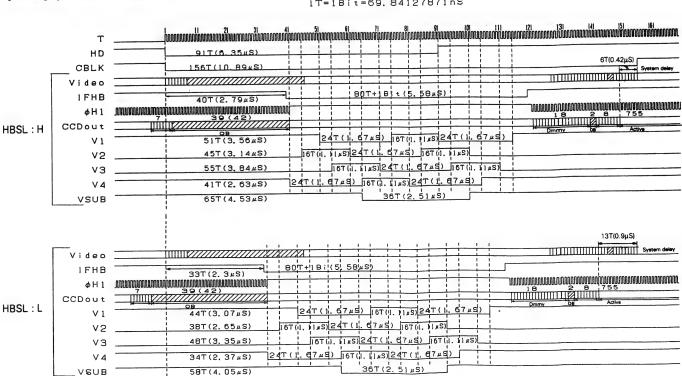
[NTSC] 2/3" CCD H-TIMING





[NTSC] 2/3" CCD H-TIMING

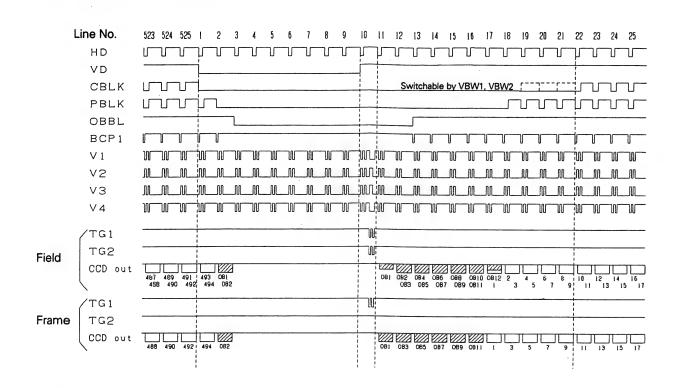
1H=910T=910Bit 1T=1Bit=69.84127871nS



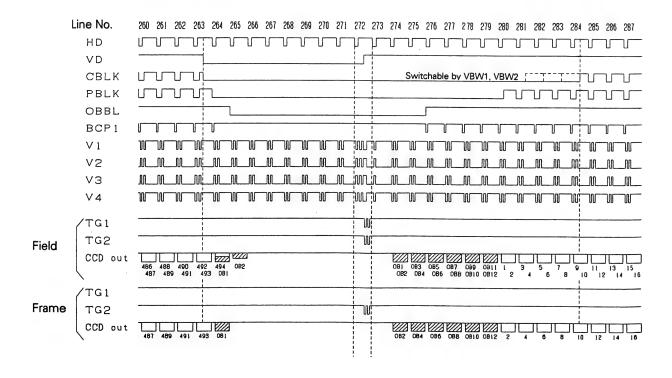
4-99

4-99

[NTSC] 2/3" CCD V-TIMING (1st field)

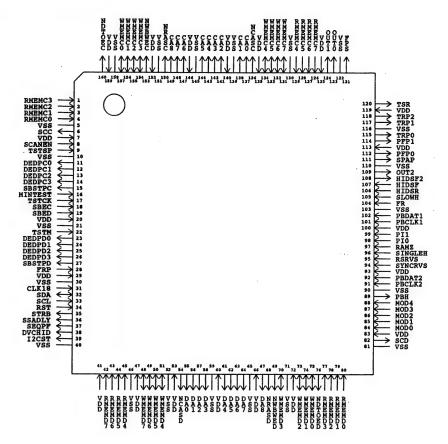


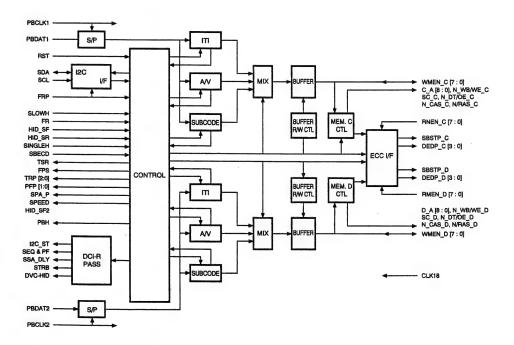
[NTSC] 2/3" CCD V-TIMING (2nd field)



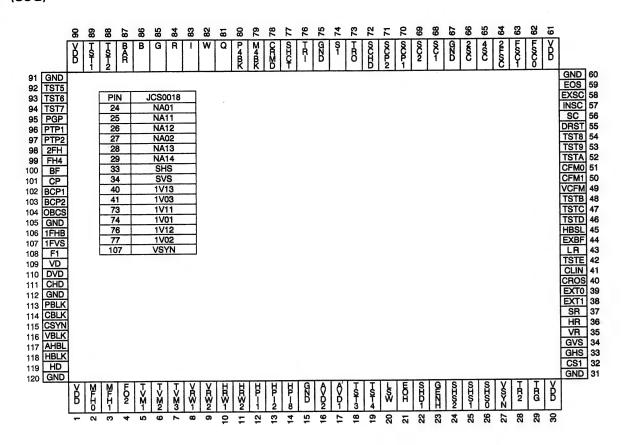
JCL0030 [JVC]

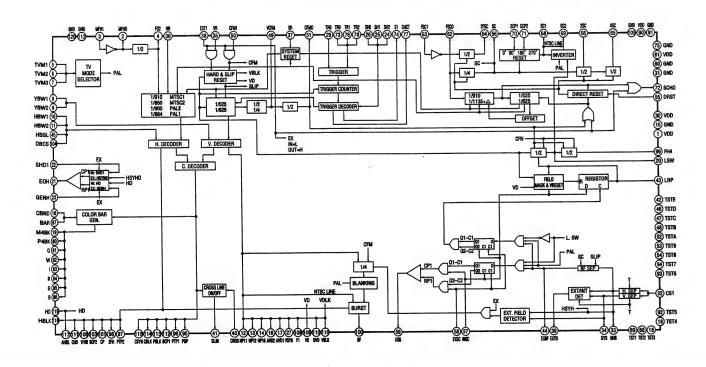
 (Digital Channel Integrated Circuit (DCI) for Play back)





JCS0027 [JVC] (SSG)





Ter	mir	nal S	pe	cifica	ations of JC	S0027	7 (4th l	Revision)		Pin No.	Pin Name				
										12	HP11	Нр	uls	se 11	
Γ		-			- Pin No.					'-		5	u.0	H. pulse to be active at 11H, 13H, 15H	
١					– Pin Name						J		Т	and 17H.	
Ġ												0 9			
2	os	co			Oscillation C	Jutput				13	HP12	H. p	uls	se 12	
	Ц	٦ [П										H. pulse to be active at 12H and 14H.	
	-		1 1		,						7	0 9			
	-		L		- Type of Buffe		DII · D	ull-up PD :	Pull-down	14	HP18	Н. р	uls	se 18	
								directional	T dir down					H. pulse to be active at 18H.	
					Num	ber : Ou	tput cur	rent (mA)				0 9	T		
			<u> </u>		Input/Output	:					0110		_		
	ı				– Polarity					15	GND	Gro	unc	d	
Pi	- 1	Pin					5			16	AVD2	Pre-	vei	rtical drive pulse 2	
No		Nam					Function	n						Vertical drive pulse whose phase is 8H	
1		VDD		+5 l	Power supply	/								ahead of VD pulse.	
2	!	MFH	10	Syn	chronizing os	scillation	n outpu	ıt						Functions as subcarrier blanking for SECAM system.	
		Г	۱ ۱	$\overline{}$	Outpo	ut termi	inal for	built-in osc	cillator			0 9		SECAWI SYSTEM.	
_	+		-	0	<u> </u>					17	AVD1	Pre	ve	rtical drive pulse 1	
3	3	MFH	"	Syn	chronizing os				lata s					Vertical drive pulse whose phase is 1H	
		П		Input terminal for built-in oscillator										ahead of VD pulse.	
	1	F02		1/2 divided output							7	0 9			
			,	1/2 divided output of synchronizing oscil-							TST3	Tes	t te	erminal 3	
		П	_	0 9 lator										Set this terminal open in general.	
5	5	TVM	11	TV mode 1								I P	U		
										19	TST4	Tes	t te	erminal 4	
				I P	U		NTSC2		1 PALM SECAM					Set this terminal open in general.	
6	3	TVN	12	TV	mode 2	1820FH	1716FH		H 1716FH 1716FH		_	I P	U		
`			_		TVM	41 L	Н	L H	L H	20	LSW	Line	e s	witch	
			-	I P	TVM	12 L	L	н н	L L	.				Half-divided FH output.	
-	\dashv				TVN	/3 L	L	L L	нн					Switches color difference signal of neighboring lines by 180° in phase for PAL	
	7	TVN	13	TV	mode 3					Ⅱ.	П	-	Т	system.	
		_	-							-	ļ	1 1	9	nchronizing digital phase comparison output	
-	_			I P	יטן					21	EOH	H. S	syn	As compared with leading edge of SHDI;	
1	8	VBV	V 1	V. t	olanking cont	rol 1	VBW1	L H	L H					when internal HD has advanced phase: Low	
							VBW2	L L	н н					level, when internal HD has lagged phase: High level,	
				ı	PU		NTSC1	21H 20H	19H 18H					when internal HD is in-phase: High impedance.	
	9	VBV	ΛIO	1	olanking cont	trol 2	NTSC 2	21H 20H 26H 25H	19H 18H			0 1	IR 1	13	
	9	VBV	٧Z	V.,	Jianking com	,1012	PAL2	26H 25H		22	SHDI			nchronizing digital phase comparison input	
							PALM	21H 20H				(tra	ilin	ng detection)	
		-	-	Ь.Т.			SECAM	26H 25H	24H 23H					Input of horizontal drive signal originating from subcarrier.	
1	-	יםע	IBW1 H. blanking control 1							11				Active when EXTL is low level. When this	
1	0	L 18	VVI	".	Piariking CON	aut 1	HBW1	L H	L H					is inactive, GHS (No. 33) is internally connected.	
				HBW2 L L H H					1 -			PU			
		-		NTSC1 157T 156T 154T 152T NTSC2 143T 147T 146T 152T						23	GENH	H.	syr	nchronizing digital phase comparison input	
+	11	HR	W2	+	blanking con	trol 2	NTSC2	143T 147T				(tra	illit.	ng detection) Input for external synchronization, hori-	
	•	"	. • •	"			PAL2	170T 167						zontal synchronization and phase adjust-	
							PALM	148T 147						ment. Active when EXTI is high level. When this is inactive, HD (No. 119) is	
		-	_		PU		SECAN	A 162T 159	T 156T 153T		7	1	SH		

Pin	Pin	Function	Pin	Pin	Function			
No. 24	Name SHS2	Shutter speed setting 2	No. 35	Name VR	Vertical reset			
	0,102	Random shutter setting	35	V n				
1	ĺ	function (Refer to the			External synchronizing input by slip system. If this system is input in vertical			
		specifications.) SHS2 SHS1 SHS0 Shutter speed			sync. period, hard reset is activated. Input			
		L L 1/60 1/50			in other period stops internal counter for a			
		I PU		1	PU period of pulse width.			
25	SHS1	L H 1/100 1/120	36	HR	Horizontal reset			
		setting 1 L H L 1/250 Random shutter			December has insured assurement 4T hafers			
		setting function (Refer L H H 1/500			Presets horizontal component 1T before rise of HD. Jitters in a period shorter than			
		to the specifications.)			140 ns are absorbed. However, operation			
		H L L 1/1000		17	is not secured for continuous input.			
26	SHS0	Shutter speed H L H 1/2000	37	SR	System reset			
20	01100	setting 0 H H L 1/4000	3/	311	Inside of IC is forcibly initialized regardless			
		Random shutter			of internal or external synchronization.			
		setting function (Refer to the specifications.)			VR and HR inputs are ineffective. Jitters			
				¬	in a period shorter than 140 ns are absorbed.			
		I PU			I PU ea.			
27	VSYN	V. sync. output	38	EXTI	Internal/External synchronization setting input			
		Vertical synchronizing signal of V. EQ pulse width.			L : Internal synchronization			
					H : External synchronization			
	5	0 9			I PD			
28	TR2	Sync. reset mode setting	39	EXTO	Internal/External synchronization setting output			
		For sync. reset mode setting when ran-			L: Without CSI input			
		dom shutter setting functions is activated.			After detection of no SHS, another SHS is			
					not detected for a period of 8 fields. H: With CSI input			
		ı Pu			After detection of SHS, 200 or more			
29	TRG	Trigger input		_	SHS's are detected in 1 vertical period.			
		Trigger input to activate random shutter	40	CROS	Cross ON/OFF input			
		setting function. (Refer to the random	"	0,100				
		shutter specifications.)			L: To stop cross output H: To activate cross output operation			
		ı Pu			For detail, refer to supplementary specifi-			
30	VDD	+5V power supply			cations of respective terminals.			
į			-	0.111	I PD			
			41	CLIN	Cross output			
31	GND	Ground			To output a cross in the center of screen.			
					For detail, refer to supplementary specifi-			
32	CSI	Ext. composite sync. signal input		几	cations of respective terminals.			
					0 9			
		To input external composite synchronizing signal for horizontal and vertical separa-	42	TSTE	Test terminal E			
		tion and ext. sync. signal input detection.			Set this terminal open in general.			
	7			_	I PU			
33	GHS	I SH PU	43	LR	 			
33	Gno	Horizontal separate sync.	43	LIT	Line reset When EXTI is external synchronization			
		Horizontal separate signal of external			(High level), setting signal is supplied to			
		composite synchronizing signal. 1/2 equiv-			LSW. When internal burst is ahead of			
	7	alent pulse is not included.			external burst in phase, High level is output.			
		0 9			When internal burst is behind external			
34	GVS	Vertical separate sync.			burst in phase, Low level is output (for 6			
		Vertical separate signal of external			clocks of SC). Phase comparison is not operated for one			
		composite synchronizing signal. 1/2 equiv-			field after output.			
	¬ -	alent pulse is not included.		7 -	For detail, refer to supplementary specifi-			
	15	0 9		5	o s cations of respective terminals.			

Pin No.	Pin Name	Function	Pin No.	Pin Name	Function
44	EXBF	Brust flag separate output	54	TST8	Test terminal 8
	·	With detection of one or more H. sync pulse from CSI input, pulse whose width is for 6 cycles of subcarrier is output. For details, refer to supplementary specifications of respective terminals.			Set this terminal open in general.
45	HBSL	H. blanking reset	-	DDGT	
46	TSTD	To switch output position of IFHB (106). L: System delay 900 ns approx. H: System delay 450 ns approx. I PU Test terminal D	55	DRST	When EXTI is low level, the following operations are realized. To switch reset operation of horizontal counter for subcarrier. To reset color frame synchronizing with horizontal counter with High level; To
	_	Set this terminal open in general.		_	reset color frame with Low level.
47	TSTC	Test terminal C	-	00	
4/		Set this terminal open in general.	56	sc	To monitor subcarrier signal connected internally with digital phase comparator. When phase of SC1 (68) is 0°, this output is inphase.
48	TSTB	Test terminal B	57	INSC	Internal subcarrier input
		Set this terminal open in general.			Shall be connected with SC (56). Effective when EXBF is low level. Pulse rise is detected.
49	VCFM	VTR color frame	58	EXSC	External subcarrier input
	\mathcal{T}	Color frame for VTR exclusively. 2-field period for NTSC1, NTSC2 and PAL. 4-field period for PAL1, PAL2 and SECAM.			Effective when EXBF is low level. Pulse rise is detected.
50		0 9	-		
50	СЕМІ	Color frame input Effective with EXTI being low level. Used for color frame control in external synchronization. Reset to synchronizing circuit by the slip system.	59	EOS	Digital phase comparison output for subcarrier As compared with leading edge of EXSC; when internal SC has advanced phase: Low level, when internal SC has lagged phase: High level, when internal SC is in phase: High impedance.
51	CFMO	Color frame output			O TR 13
		Pulse output at the beginning of every color frame. 4-field period for NTSC1 and NTSC2. 8-field period for PAL1, PAL2, PALM and	60	GND	Ground
	T	O 9 SECAM.	61	VDD	+5V power supply
52	TSTA	Test terminal A			
		Set this terminal open in general.	62	FSCO	Oscillator output for subcarrier
		I PU	63	FSCI	Oscillator input for subcarrier
53	TST9	Test terminal 9		П	
			64	2FSC	Double subcarrier output
		Set this terminal open in general.			Half-divided oscillator output for subcarrier

No. Name 65 4SC 1/4 subcarrier output 1/4-divided output of subcarrier frequency 66 2SC 1/2 subcarrier output 1/2-divided output of subcarrier frequency 67 GND Ground 68 SC1 Subcarrier 1 Subcarrier 1 Subcarrier frequency output. Phase is changed by SCP1 and SCP2. I PD Ground No. Name 75 GND Ground 76 TR1 Random reset system setting input To determine reset stem. L: SYNC reset system system. (Refer to the specific shutter setting function shutter setting function shutter setting function shutter control output Electronic shutter control output Electronic shutter control output Shall be connected to (µPD9438GK).	system setting , H: SYNC non- ications of rai	
66 2SC 1/2 subcarrier output 1/2-divided output of subcarrier frequency 0 9 67 GND Ground 68 SC1 Subcarrier 1 Subcarrier frequency output. Phase is changed by SCP1 and SCP2. 76 TR1 Random reset system setting input To determine reset stem. L: SYNC reset system, (Refer to the specific shutter setting function shutter control output Electronic shutter control output Electronic shutter control output Shall be connected to the specific shutter control output Figure 1 To determine reset stem. 1/2-divided output of subcarrier frequency Shall be connected to the specific shutter control output Figure 2 Figure 3 Figure 3 Figure 3 Figure 4 Figure	system setting , H: SYNC non- ications of rai	
66 2SC 1/2 subcarrier output 1/2-divided output of subcarrier frequency 67 GND Ground 68 SC1 Subcarrier 1 Subcarrier 1 Subcarrier frequency output. Phase is changed by SCP1 and SCP2.	system setting , H: SYNC non- ications of rai	
tem. L: SYNC reset system, system. (Refer to the specific shutter setting function) 68 SC1 Subcarrier 1 Subcarrier frequency output. Phase is changed by SCP1 and SCP2.	, H: SYNC non-	
System. (Refer to the specific shutter setting function in the setting functi	ications of rai	-reset
67 GND Ground 68 SC1 Subcarrier 1 Subcarrier frequency output. Phase is changed by SCP1 and SCP2. (Refer to the specific shutter setting function of the spec		10301
68 SC1 Subcarrier 1 Subcarrier frequency output. Phase is changed by SCP1 and SCP2.	11.,	ndom
68 SC1 Subcarrier 1 77 SHCT Shutter control output Subcarrier frequency output. Phase is changed by SCP1 and SCP2. Shutter control output Electronic shutter control output Shall be connected to		
Subcarrier frequency output. Phase is changed by SCP1 and SCP2. Electronic shutter cont Shall be connected to		
Phase is changed by SCP1 and SCP2. Shall be connected to	trol signal.	
UPD9438UN.	o SHCT (19) o	of TG
(Refer to the specifi		ndom
69 SC2 Subcarrier 2 78 CBMD SMPTE/FULL	,	
Subcarrier frequency output whose phase To switch color bar s	signal to SMP	TE or
is 90° ahead of SC1. Phase is changed by SCP1 and SCP2. FULL. L: Full Field mode —	Effective only BAR signal of	
In PAL mode, phase is inverted by 180° H: SMPTE mode ——	level.	
70 SCP1 Subcarrier select 1 79 M4BK Color bar		
Note: SC2 is expressed based on SC1.	ı W	
NTSC1 H X	L L Effective Effective	- (1
NTSC2 L L	Effective Effective	
71 SCP1 Subcarrier H X	L L	
select 2	Effective Effective	
H H 270° 90° ahead (180°)	L L	
I PD PALM L H	Effective Effective	
72 SCHD Subcarrier horizontal driver		(10044)
Horizontal drive pulse originating from 81 Q Color bar SECAM L H	L L Effective Effective	(75%W)
subcarrier frequency.	LLL	
0 13		
	P4BK M4BK	
To set random shutter control system. NTSC1 Effective Ef	L L Ifective	
L: 8-stage default control, H: Pulse width continuous control (Refer to the signal NTSC2 L	LL	
specifications of random shutter setting	L L ffective Effective	
PAL2 Lifecture L	L L	
74 SI Strohoscope index output	L L	
In normal operation, this output is for 83 Color bar PALM Effective El	ffective Effective L	
stroboscopic lamp emitting time.	LL	
for video output time.	iffective Effective	
(Refer to the specifications of random shutter setting function.)		

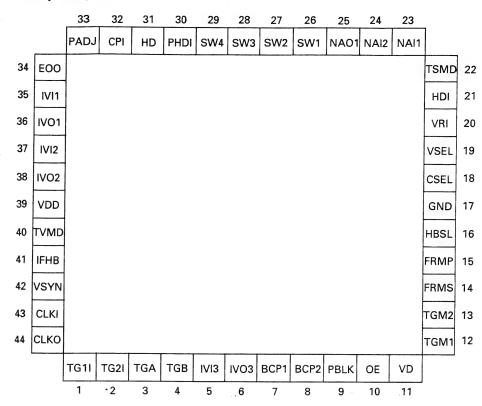
Pin No.	Pin Name			Fu	ınction				Pin No.	Pin Name	Function					
84	R	Color bar							95	PGP	Pilot gate pulse					
		signal									Uniform voltage level of two signals, one passes the 1FH delay line and the other					
				BAR	C3MD	В	G	R			does not pass the 1H line, with each other in order to compensate attenuation					
	工	0 9	NTSC1 NTSC2	H	X X	L Effective	L Effective	L Effective		Ш	caused by the delay line.					
85	G	Color bar signal	PAL1	Н	x	L	L	L	96	PTP1	Pilot pulse 1					
			PAL2	Ľ	x	Effective	-	Effective			Uniform voltage level of two signals, one passes the 1H delay line and the other					
	几	0 9	PALM	Н	X X	L E#a ativa	L Effective	L Effective			does not pass the 1H line, with each other in order to compensate attenuation					
86	В	Color bar	25044	L		Effective	L	FIIOCIIVO		丁	caused by the delay line.					
		signal	SECAM	H L	X	_	_	Effective	97	PTP2	Pilot pulse 2					
			L			I	L				Used to control video level.					
	7	0 9								T	0 9					
87	BAR	Color bar c	ontrol (O	N/OFF	•)				98	2FH	Double FH					
			BAR	R, G	i, B, I,	Q, W, P		4BK			NTSC1 NTSC2 PAL1 PAL2 PALM SECAM					
			H	-	Fixe	Effective ed at Lo					31.468 31.468 31.25 31.25 31,468 31.25					
88	TST2	Test terminal 2								FH4	0 9 1 1/4FH					
00	1312	rest terrin	101 2						99		Half-divided output of LSW.					
		Set this terminal open in general.									Equivalent to 25 Hz in PAL mode.					
		I PU								П	0 9					
89	TST1	Test termin	nal 1						100	BF	Burst flag					
			Set this	s termi	inal op	en in ge	neral.				Regulates period to insert subcarrier into back porch of horizontal sync. signal.					
	<u></u>									1	Functions to switch chromaticity signal for every line in SECAM mode.					
-	1/00	I PU							101	СР	0 9					
90	VDD ·	+5V powe	rsuppiy							Cr	Signal to clamp reference voltage of black					
91	GND	Ground							1		level.					
31	GIVE	diodila								一	0 9					
92	TST5	Test termi	nal 5						102	BCP1	Black clamp pulse 1					
			Cat thi	o torm	inal on	en in ge	neral				Fixes black level of CCD output signal.					
			Set till	S LOIIII	пагор	en in ge	niciai.									
		I PU							-		0 9 1					
93	TST6	Test termi	nal 6						103	BCP2	Black clamp pulse 2					
		Set this terminal open in general.									Fixes black level of CCD output signal (at every H output).					
	—	I PU								1	0 9					
94	TST7	Test term	inal 7						104	OBCS	Optical black pulse select					
			0	4	امسا		norel				Switching of output position of horizontal					
			Set th	is term	inal op	en in ge	enerai.				BCP1 and BCP2. L: Frontward output					
		0 9									I PU H: Backward output					

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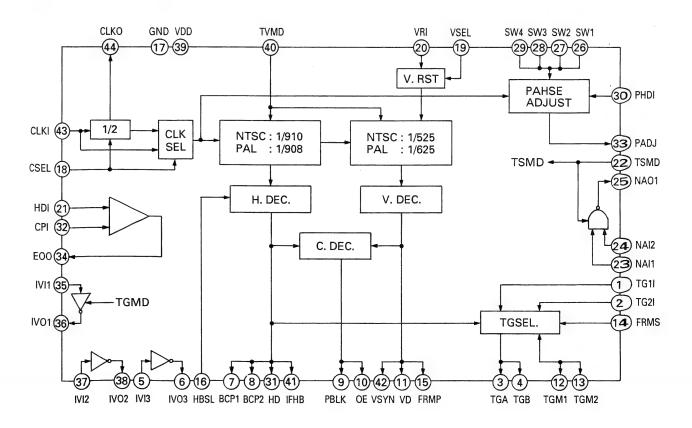
Pin No.	Pin Name	Function	Pin No.	Pin Name	Function
105	GND	Ground	115	CSYN	Composite sync.
					Composite synchronizing signal comprising of four signals of HSYN, VSYN, EQ
106	IFHB	Interface horizontal blanking		~	and SAW.
1		Output pulse that is narrower than HBLK both in leading edge and trailing edge.	116	-	0 9
			110	VBLK	V. blanking
107	IFVS	0 9	1		Vertical blanking signal whose pulse width can be changed with VBW1 and VBW2.
	" ,0			1	0 9
		Normal function: To output vertical synchronization signal having the same pulse	117	AHBL	Pre-horizontal blanking
		width of V. EQ pulse. Random shutter setting function: To out-			Pulse that HBLK is advanced in breaking
		put the same signal as V. sync. signal in the fall time.			of leading edge.
		0 9	 	V	0 9
108	FI	Field index Field discrimination signal.	118	HBLK	H. blanking
		L: Field that HD and VD fall at the same			Horizontal blanking pulse whose pulse width can be changed with HBW1 and
		time. H: Field that there is a time lag of 0.5H in			HBW2.
		falling between HD and VD.	119	HD	H. drive
109	VD	Vertical drive pulse			Pulse synchronized with beginning of
		Pulse output at the beginning of every field.			respective lines. Used as horizontal timing standard of the set.
	7	Used as the vertical timing standard for the set.			O 13
110	DVD	Delayed vertical drive pulse	120	GND	Ground
		Vertical drive signal that lags behind VD			
		pulse. Controls camera's scanning timing and			*
		regulates activation time of sawtooth waveform of vertical deflection circuit.	L		
	7	O 9			
111	CHD	Delayed horizontal drive pulse			
		Controls camera's scanning timing. Regulates activation time of sawtooth			
	7	waveform of horizontal deflection circuit.			
112		0 9			
112	GND	Ground			
113	PBLK	Pre-blanking			
		Composite blanking signal used for video			
		processing. As compared with CBLK signal, this signal			
	7	o 9 is narrower in the leading edge.			
114	CBLK	Composite blanking			
		Horizontal and vertical composite blanking signal.			
	T	0 9			
		0 9			

JCS0028 [JVC] (H, V Timing Generator)

(Top View)



BLOCK DIAGRAM

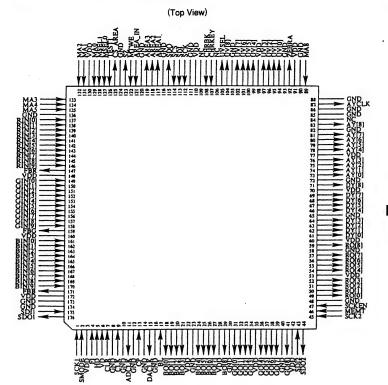


PIN No. Pin No	DIN S	PECIFIC	ATIONS	T		T
Pin Name Pin Na	FINS	or Eciric		No.	Symbol	
2				12	TGM1	When both of TGM1 (12) and TGM2 (13) are used, it is possible to set the READ
Total Transfer Gate 1 Input Connect µPD438AGK (12) Instruced that put Instruction Input Connect µPD438AGK (12) Instruction Ins	2	osco	Osillation output			
Type of buffer SH: Schmitt PU: Pull-up PD: Pull-down TR: Tri-state TH: Through rate Figure: Output current (mA) Polarity FRMS Frame Select Figure: Output current (mA) FRMS Frame Select Figure: Output only) H: B frame (TG1B, TG1A, output only) H:			0	13	TGM2	I I 4 pixels read-out (field)
Selection Pulse	L			13	TGIVIZ	L H 3 pixels read-out
TH- Through rate Figure: Output current (mA) Input/Output Input/Output Polarity No. Symbol Description Tatl Transfer Gate 1 input Connect µF09438AGK (11) I fl not used, do not change the level. Tage Transfer Gate 2 input Connect µF09438AGK (12) I fl not used, do not change the level. Tage Transfer Gate 3 Output Electric charge transfer pulse output from o g g Tage 1 (1) for eV1A and eV3A use. Transfer Gate B Output Electric charge transfer pulse output from o g g Transfer Gate B Output I fl not used, do not change the level. Transfer Gate B Output I fl not used, do not change the level. Transfer Gate B Output I fl not used, do not change the level. Transfer Gate B Output I fl not used, do not change the level. Transfer Gate B Output I fl not used, do not change the level. Transfer Gate B Output I fl not used, do not change the level. The invert output 13 The invert output of IV13 (5). I l su used to select the frequency input dock. L t H318 MHz (NTSC), 14.187 MHz (PAL). H Y28.636 MHz (NTSC), 26.37MHz (PAL). H Y28.636 MHz (NTSC), 26.37MHz (PAL). H Y28.636 MHz (NTSC), 26.37MHz (PAL). H Y28.636 MHz (NTSC), 14.187 MHz (PAL). H Y28.636 MHz			SH: Schmitt PU: Pull-up			H H 1 pixels read-out
AB trame switching terminal for 1 pixel read-out. L: A frame (TG3B, TG3A, output only)						
Input/Cutput			Figure: Output current (mA)	14	FRMS	A/B frame switching terminal for 1 pixel
No. Symbol Description Tight Transfer Gate 1 Input Connect µPD9438AGK (11) Tight Transfer Gate 1 Input Connect µPD9438AGK (12) Transfer Gate 2 input Connect µPD9438AGK (12) Transfer Gate 2 input Connect µPD9438AGK (12) Transfer Gate 2 input Connect µPD9438AGK (12) Transfer Gate A Output Tight Tight Transfer Gate A Output Tight Tight Transfer Gate A Output Tight Ti			Input/Output			L: A frame (TG3B, TG3A, output only)
No. Symbol Description Tag Transfer Gate 1 input Connect µPD9438AGK (11) I I I I I I I I I		L	Polarity			
Transfer Gate Injust Injustice Injust Injustice Injust Injustice Injust Injus	No.	Symbol	Description	15	PRMP	
Connect programmer Post-SARAK (12) Transfer Gate 2 input Connect programmer Post-SARAK (12) Transfer Gate 2 input Connect programmer Connect	1	TG1 I	•			
Connect µPD9438AGK (12) I If not used, do not change the level. 3 TGA Transfer Gate A Output Electric charge transfer pulse output from TG1 I (1) for eV1A and eV3A use. 4 TGB Transfer Gate B Output Electric charge transfer pulse output from TG2 I (2) for eV1B and eV3B use. 5 IVI3 Common Invert Input 3 If not used, do not change the level. I I I I I I I I I I		1				is capable of being selected automatically.
Transfer Gate A Output Electric charge transfer pulse output from To 9 Total (1) for eV1A and eV3A use.	2	TG2 I	Transfer Gate 2 Input	16	HBSL	Interface Horizontal Blanking Select
Transfer Gate A Output Electric charge transfer pulse output from TG 1 (1) for øV1A and øV3A use. 17 RND Grounding 18 CSEL Clock Select It is used to select the frequency input clock. L: 14.318 MHz (NTSC), 14.167 MHz (PAL), H: 28.636 MHz (NTSC), 28.37MHz (PAL) H: 28.636 MHz (NTSC), 28.37MHz (PAL),		חר				
Transfer Gate B Output Transfer pulse output from TG 11 (1) for a V1A and a V3A use.	3		Transfer Gate A Output			H: System delay 450 ns approx.
TGB		¬ -	TO4 1/4) for all/4 and al/04 ups	17	GND	Grounding
Electric charge transfer pulse output from TG2 I (2) for eV1B and eV3B use. 5 IVI3 Common Invert Input 3 If not used, do not change the level. 6 IVO3 Common Invert Output 3 The invert output of IVI3 (5). 7 BCP1 Black Clamp Pluse 1 Fixing the black level of CCD output signal. 8 BCP2 Black Clamp Pluse 2 Fixing the black level of CCD output signal. 9 PBLK Preblanking Used in process of picture treatment to blank the compound flying-back lines. This PBLK has a syape of narrow fore edge compared with CBLK. 10 O D D-EVEN The signal to distinguish the ODD and EVEN. 10 VV	-	-		18	CSEL	
H: 28.636 MHz (NTSC), 28.37MHz (PAL)	4	IGB	Electric charge transfer pulse output from			
If not used, do not change the level. 19 VSEL VD/V SYNC Select 18 is used to select signals that are input to VRI (20). L: VSYNC signal input, H:VD signal input, (PBLD ends before 3H). 1 PD		 	9 0			
1 1 1 1 1 1 1 1 1 1	5	IVI3	•			I PD
The invert output 3				19	VSEL	
H:VD signal input (PBLD ends before 3H). H:VD signal input (PBLD ends before 3H).	6	IVO3	·			VRI (20).
7 BCP1 Black Clamp Pluse 1 Fixing the black level of CCD output signal. But, outputting per H. 8 BCP2 Black Clamp Pluse 2 Fixing the black level of CCD output signal. But, outputting per H. 9 PBLK Preblanking Used in process of picture treatment to blank the compound flying-back lines. This PBLK has a syape of narrow fore edge compared with CBLK. 10 OE ODD-EVEN The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field 11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field. 20 VRI EXT. Vertical SYNC Input VSYNC/VD signals are selected according to VSEL (19). Depending on the input, the other IC and vertical SYNC may be taken off. [RPI] EXT. Horizontal SYNC Input (Ref. input for digital phase comparator) Depending on the input of HD signal, the horizontal SYNC may be taken off. (To detect when the input signal goes off.) Test Mode Switching Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. 11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field.		_				H:VD signal input (PBLD ends before 3H).
Second Process of Part Second Process of P	7	BCP1		-00		
BCP2 Black Clamp Pluse 2 Fixing the black level of CCD output signal. BUT Depending on the input, the other IC and vertical SYNC may be taken off. BUT Depending on the input, the other IC and vertical SYNC may be taken off. BUT Depending on the input (Ref. input for digital phase comparator) Depending on the input of HD signal, the horizontal SYNC may be taken off. This PBLK has a syape of narrow fore edge compared with CBLK. Depending on the input (Ref. input for digital phase comparator) Depending on the input of HD signal, the horizontal SYNC may be taken off. To detect when the input signal goes off.) The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field The vertical PIVE The vertical SYNC may be taken off. To detect when the input signal goes off.) Test Mode Switching Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. The vertical SYNC may be taken off. To detect when the input of HD signal, the horizontal SYNC may be taken off. To detect when the input of HD signal, the horizontal SYNC may be taken off. To detect when the input of HD signal, the horizontal SYNC may be taken off. To detect when the input of HD signal, the horizontal SYNC may be taken off. To detect when the input of HD signal, the horizontal SYNC may be taken off. To detect when the input of HD signal, the horizontal SYNC may be taken off. To detect when the input of HD signal specified in SYNC may be taken off. To detect when the input of HD signal specified in SYNC may be taken off. To detect when the input of HD signal specified in SYNC may be taken off. To detect when the input of HD signal specified in SYNC may be taken off. To detect when the input of HD signal specified in SYNC may be taken off. To detect when the input of HD signal specified in SYNC may be taken off. To detect when the input of HD signal specified in SYNC may be taken off. To detect when the input of HD signal specified in SYNC may be taken off. To detec		¬г	Dut subsubling part!	20	VINI	VSYNC/VD signals are selected according
9 PBLK Preblanking Used in process of picture treatment to blank the compound flying-back lines. This PBLK has a syape of narrow fore edge compared with CBLK. 10 OE ODD-EVEN The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field 11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field. 121 HDI (RPI) EXT. Horizontal SYNC Input (Ref. input for digital phase comparator) Depending on the input of HD signal, the horizontal SYNC may be taken off. (To detect when the input signal goes off.) 1 SH 21 HDI (RPI) Depending on the input of HD signal, the horizontal SYNC may be taken off. (To detect when the input signal goes off.) Test Mode Switching Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. 23 NAI1 Common NAND Input 1 If not used, fix the level.	8					Depending on the input, the other IC and
9 PBLK Preblanking Used in process of picture treatment to blank the compound flying-back lines. This PBLK has a syape of narrow fore edge compared with CBLK. 10 OE ODD-EVEN The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field 11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field. 21 HDI (RPI) (RPI) (RPI) EXT. Horizontal SYNC Input (Ref. input for digital phase comparator) Depending on the input of HD signal, the horizontal SYNC may be taken off. (To detect when the input signal goes off.) Test Mode Switching Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. 23 NAI1 Common NAND Input 1 If not used, fix the level.		7 -			L	I SH vertical SYNC may be taken off.
Used in process of picture treatment to blank the compound flying-back lines. This PBLK has a syape of narrow fore edge compared with CBLK. 10 OE ODD-EVEN The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field 11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field. To blank the compound flying-back lines. This PBLK has a syape of narrow fore edge compared with CBLK. I SH Test Mode Switching Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. NAI1 Common NAND Input 1 If not used, fix the level.	9		0 9	21		
This PBLK has a syape of narrow fore edge compared with CBLK. 10 OE ODD-EVEN The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field 11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field. This PBLK has a syape of narrow fore edge compared with CBLK. 1 I SH Test Mode Switching Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. NAI1 Common NAND Input 1 If not used, fix the level.			Used in process of picture treatment to		,	Depending on the input of HD signal, the
10 OE ODD-EVEN The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field 11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field. 12 TSMD Test Mode Switching Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. 23 NAI1 Common NAND Input 1 If not used, fix the level.		7 -	This PBLK has a syape of narrow fore			
The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field 11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field. The signal to distinguish the ODD and EVEN. L: Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. 23 NAI1 Common NAND Input 1 If not used, fix the level.	10				7	
L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals. The vertical REF. timing, which is included in the pulse set, output ahead of each field. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals.			_	22	TSMD	
11 VD Vertical Drive The vertical REF. timing, which is included in the pulse set, output ahead of each field. The vertical REF. timing, which is included in the pulse set, output ahead of each field.			L: ODD field, H: EVEN field			L: Normal operation
in the pulse set, output ahead of each field. If not used, fix the level.	11	VD				1 (05 - 100)
I not used, fix the level.				23	NAI1	·
		一工	· · · ·			II not used, lix the level.

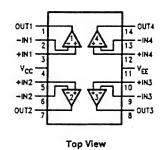
No.	Symbol	Description										
24	NAI2	С	om	mo		ID Inpu						
			If not used, fix the level.									
		ı	1									
25	NAO1	С	Common NAND Output 1									
			The NAND outputs of NAI1 (20) and NAI2									
			(21).									
00	0)4/4	ВІ	BI 9 Delay Set 1									
26	SW1	0	eiay	/ 3		ep = 70	ns ar	prox.				
							·			I	Cont	
		ı	PD			Step	SW4	SW3	SW2	SW1	value	
27	SW2	D	elay	/ S	et 2	1 2	L L	L	L	L	0	
						3	L	L	L	H	1 2	
						4	L	L	Н	н	3	
		_		_		5	L	Н	L	L	4	
		١	PD			6	L	Н	L	Н	5	
28	SW3	D	elay	/ S	et 3	7 8	L	H	H	L	6 7	
						9	Н	Ľ	Ľ	L	8	
						10	Н	L	L	Н	9	
						11	Н	L	Н	L	10	
		1	PD			12	Н	L	H	H	11	
29	SW4	D	elav	S	et 4	13 14	Н	H	L	H	12 13	
	• • • • • • • • • • • • • • • • • • • •		,			15	Н	Н	Н	L	14	
						16	Н	н	Н	Н	15	
			PD									
20	DUDI	\perp			ali lasas	4						
30	PHDI	Pi	ias	е А	dj. Inp		vhen ti	he HD	innut	for nh:	ase adj.	
						uit goes		110 110	input	ioi piic	ase daj.	
					If no	t used,	fix the	e level				
	٦.		П									
04					al Date							
31	HD	H	oriz	ont	al Driv	e horizo	ntal tin	nina ei	anal v	which i	e	
						ided in						
					with	start o	f each				signal	
	7 -		13		use	d for S	r NC.					
	<u>П</u>	Н					D:-:-	. 51	-			
32	CPI	C	omp	oari		put for						
					100	letect v	viieii (i	ne inpi	ut sign	aı yoe	S UII.	
	٦		_{CLI}									
			SH									
33	PADJ	P	nas	e A	dj. Ou	•	· 0 -		-141-	1		
						outputt value o						
		the value of which is set by SW1~SW4 (26, 27, 28 and 29) after PHD1 (30) has										
		gone off.										
	Ш	0 9										
34	EOO	Di	gita	l P		Compa						
						s relati			odono	•		
						ne phas ding ph				8		
		<u> </u>	-			ayed ph						
				9								

No.	Symbol	Description
35	IVI1	Common Invert Input 1
		If not used, fix the level.
00	11/04	-
36	IVO1	Common Invert Output 1 Invert output of IVI1 (35).
	-	BI 9
37	IVI2	Common Invert Input 2
		If not used, fix the level.
38	IVO2	Common Invert Output 2
30	1002	Invert output of IVI1 (37).
		O 9
39	VDD	+5V Power Supply
40	TVMD	TV Mode Switching
		Switching of NTSC and PAL L: NTSC mode, H: PAL mode
		I PD
41	IFHB	Interface Horizontal Blanking
		The pulse output with narrow leading and later edges compared with HCBLK.
		The position of output changes depending
	ח ר	on HBSL (16).
42	VSYN	Vertical SYNC.
72	VO111	The vertical SYNC output in the period of
		vertical EQ pulse.
	Ш	0 9
43	CLKI	Clock Input 28 MHz, 14 MHz clock input can be
		selected by CSEL (15).
		1
44	CLKO	Clock Output
		When 28 MHz is input to CLKI (43), half- divided frequency is output.
		When 14 MHz is input to CLKI (43), 14 MHz is output.
	Ш	O 9

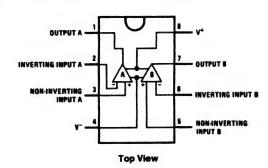
JCS0048 [JVC] (Digital Signal Processor)

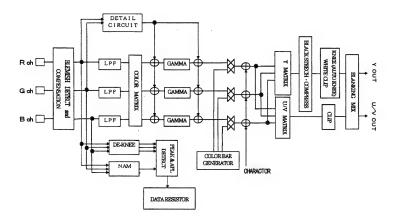






■ LMC6082IM-X [National Semiconductor] (Precision CMOS Dual Op.Amp.)





SECTION 5 EXPLODED VIEW AND ASSEMBLY LIST

SAFETY PRECATION

Parts identified by the Δ symbol are critical for safety. Replace only with specified parts numbers.

NOTE

Parts not denoted by parts numbers are not supplied by JVC.

■ CAMERA HEAD ASSEMBLY PARTS LIST M 1

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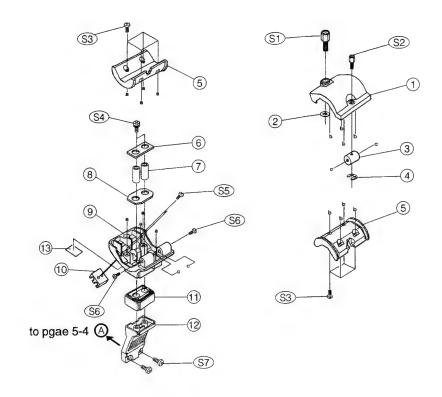
Symbol No.	Part No.	Part Name	Description
1	SC10221-001	FRONT FRAME	
2	SC44847-150 SC42550-011	SHIELD TUBE C HOLDER	
4	SC42550-011 SC45239-003	LENS CONNECTOR BRACKET	
5	SCV1938-12S	LENS CONNECTOR	
6	MLSC0691-001	WIRE ASSEMBLY	
7	SC31363-011	FILTER KNOB	
8	SC46312-001 SC20689-001	GEAR HOLDER DR BRACKET	
9	SC20689-001 SC44828-011	KNOB	
11	SC43825-002	CAP	
12	SCV0238-06S	VF CONNECTOR	
13	MLSC0690-002	WIRE KIT	
14	SCV2631-001	FERRITE CORE	
15	SC32164-001	FILTER BASE	
16 17	SC44939-001 SC44508-012	SPACER FILTER SHAFT	
18	QYWFM416525	PLASTIC WASHER	
19	SC44505-001	F.I GEAR	
20	SC46225-001	F.I SHAFT	
21	SC31365-001	FILTER WHEEL	0.5.5.0000
22	SC44651-001	FILTER	CLEAR, 3200K
23	SC44653-001	FILTER FILTER	BROWN, 1/4ND (E/EC) OREANGE, 5600K (U)
24	SC44652-001 SC44652-001	FILTER	OREANGE, 5600K (E/EC)
24	SC44653-031	FILTER	BROWN, 1/16 ND (U)
25	SC44653-031	FILTER	BROWN, 1/16 ND (E/EC)
	SC45117-001	FILTER	EFFECT (CROSS) (U)
26	SC45118-002	FILTER SHEET	
27	SC44649-001	F.W.SHAFT	
28	Q03093-841	PLASTIC WASHER	
29 30	SC44506-001 SC44627-001	FILTER STOPPER FILTER SPRING	
31	SC31364-004	FILTER COVER	
32	SC44676-005	FILTER CAP ASSEMBLY	
33	SC83183-004	FILTER BOARD	
34	QGA1501C1-05	CONNECTOR	
<u>∧</u> 35	SCM0986-P0A	OP BLOCK ASSEMBLY	(E/EC)
<u>↑</u> 35	SCM0986-N0A	OP BLOCK ASSEMBLY	(U) <isb dr="" isg="" isr="" to=""></isb>
△ 35A	SCV2803-3009B SC44704-002	FFC WIRE SCREW	<13B/13G/13H 10 DH>
35B 35C		MOUNT RING	
	SC40779-001	MOUNT SCREW	
36		OP BRACKET	
37	PU49485-4	WIRE CLAMP	
38		SHIELD TUBE	
39 40	SC46381-001 SC43021-004	MT CUSHION CUSHION	
41	QQR0895-008	FPC CORE	
42		FILTER	
43		FILTER	
44		PAD	
45		CUSHION	
S29	SC46420-001 QYSDSP2605Z	PLATE SCREW	M2.6 × 5
S31		SCREW	M3 x 6
S32		SCREW	M2 x 5
S34	QYYASPR3004M	SCREW	M3 x 4
	QYSPSPT2030M	SCREW	M2 x 3.0
S37		SCREW	M2 x 5.0
	SC43397-003	SCREW	M2 × 5.0
S39 S40	QYSPSPT2050M QYSPSPL3004Z	SCREW	M3 x 4
	QYSDSP2606M	SCREW	M2.6 x 6
	QYSDSP2605M	SCREW	M2.6 x 5.0

■ CABINET ASSEMBLY PARTS LIST M 2

M2MM	
ription	

Symbol No.	Part No.	Part Name	Description
1 2 3	SC10225-001 SC10225-002 SC20693-002 SC46410-500	L.SIDE COVER L.SIDE COVER L.SIDE PANEL GASKET	(E/EC) (U)
4	SC46410-480	GASKET	
5 6 7 8 9	SC10226-002 SC32177-011 SC46321-001 SC46321-002 QNZ0208-001	CASSETE COVER WINDOW ABSORB SHEET ABSORB SHEET CONNECTOR	MIC2
11 12	SC46246-001 PU54392-1 SC43658-001 SC10227-001 SC20709-001	MIC BRACKET LABEL LABEL SHOLDER PAD BOTTOM COVER	(E/EC) (U)
14 16 17 18	SC46242-002 SC20691-001 SC46243-001 SCV2580-001 SC45291-001	REAR BASE FRONT BASE BH CUSHION BATT.BRACKET CAP	(E)
20 21 22 23	PRD44896 PRD44897 SC32174-002 PU49485-4 SC45925-001	STAY STAY HINGE WIRE CLAMP LABEL	(E/EC)
25 26 27 28	SC32201-001 SC32201-002 SC32201-003 SC32201-004 SC32172-001	ABSORB SHEET(L) ABSORB SHEET(L) ABSORB SHEET(L) ABSORB SHEET(L) CUSHION RUBBER	
30 31 32	SC46383-001 SC46412-001 SC46374-001 PRD45092-02	SHEET SHIELD CUSHION SHEET LABEL SHIELD CUSHION	
35 37 38	SSV2252 SC46421-001 QNZ0260-001	UL LABEL CLAMP CORE 6P PLATE RECEPTACLE (6S) SCREW	(U) (E/EC) TO SETUP-BOX M3 x 8 (U/EC)
S22	SC43397-009 QYSDSP2605Z QYSDSP3006M QYSDSP3006M	SCREW SCREW SCREW SCREW SCREW	M2.6 x 5 M3 x 6 M3 x 6 M3 x 6
\$44 \$53 \$56 \$57	QYSSSP4008N QYSPSPT2650M QYSPSPT2640N	SCREW SCREW SCREW SCREW	M4 x 8 M2.6 x 5.0 M2.6 x 4.0 M2.6 x 6

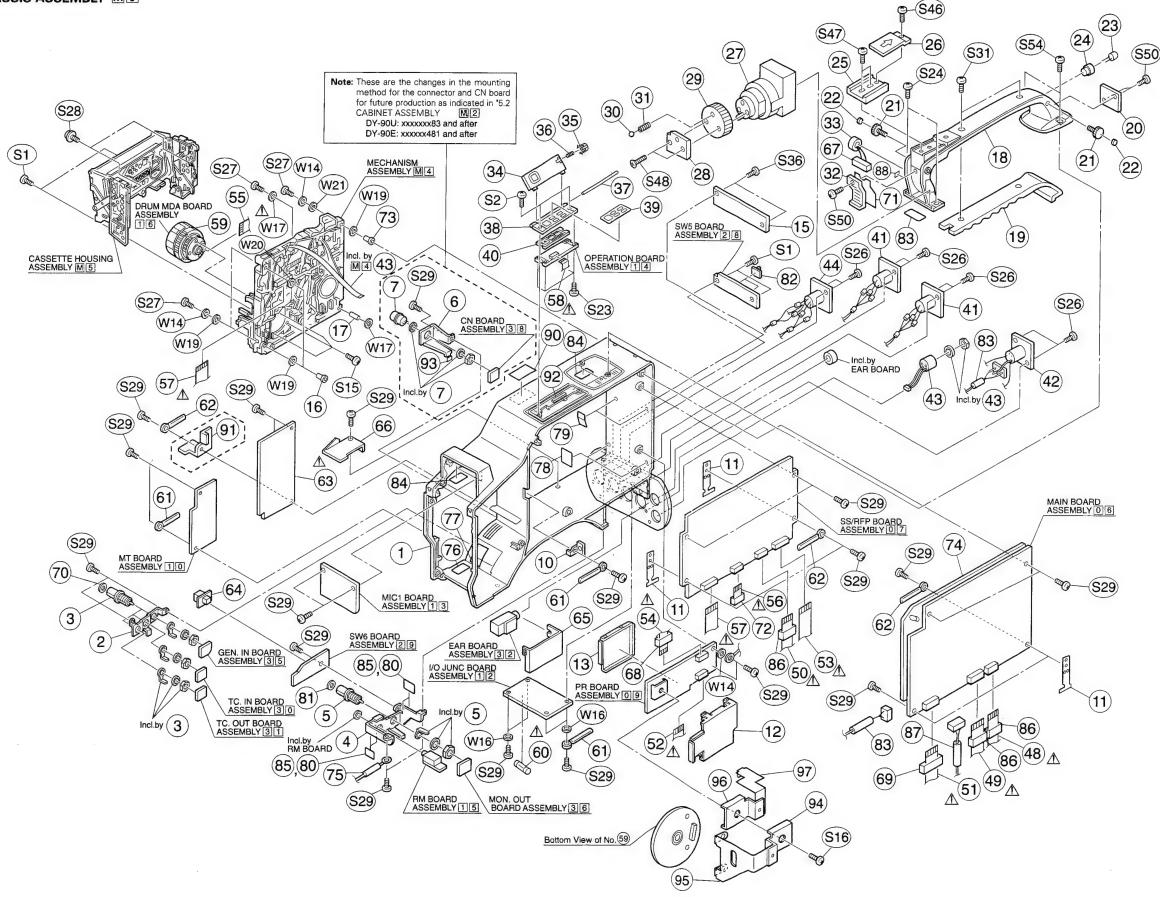
■ MIC HOLDER ASSEMBLY M9 (For DY-90EC/EC(K))

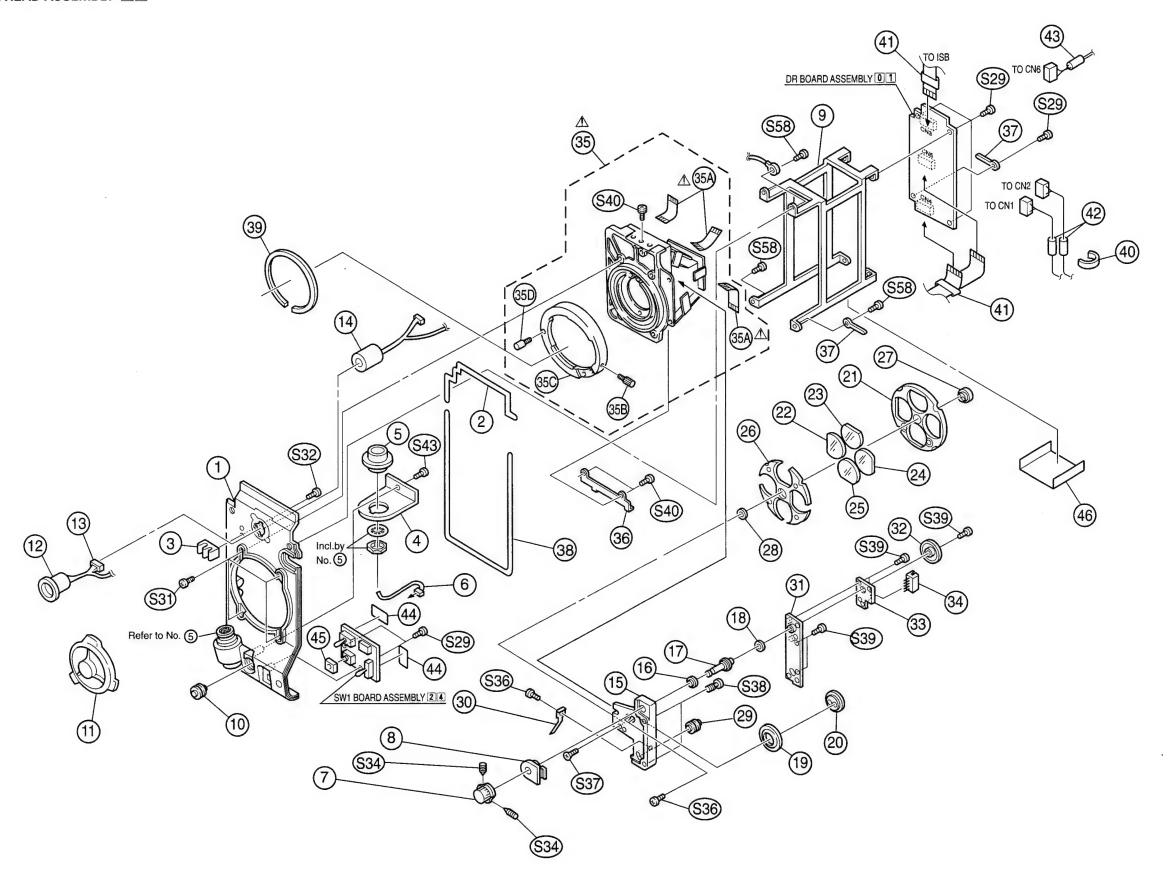


■ MIC HOLDER ASSEMBLY PART LIST M 9 (Only for DY-90EC)

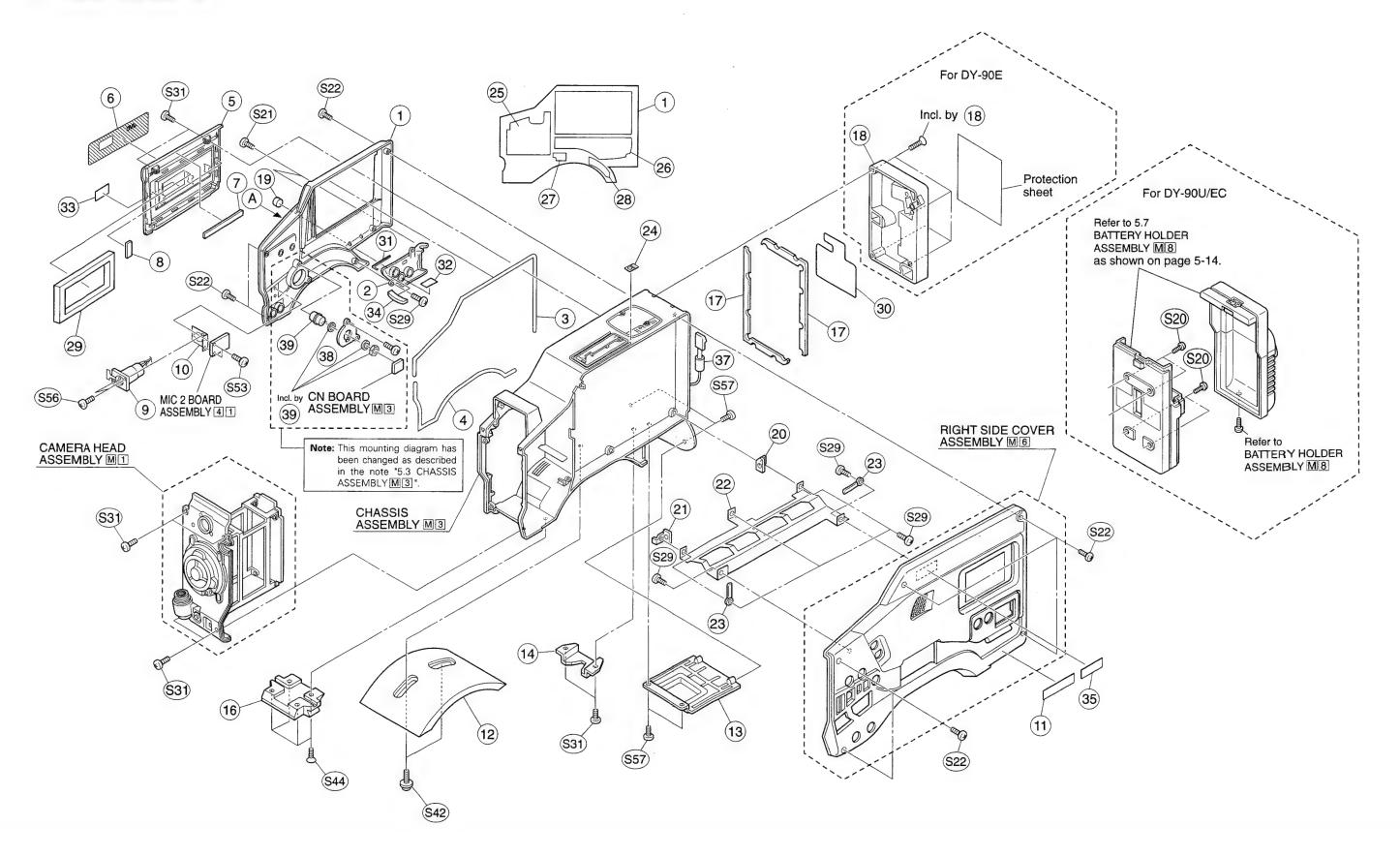
D.A	OB	8 8 8	$\neg \Gamma$	
IVI	3 1117		11	H B I

Symbol No.	Part No.	Part Name	Description
1	SC20699-001	UPPER HOLDER	
2	SC45316-031	O RING	
3	SC46326-001	PIN	
4	QYREE2000	E.WASHER	
5	SC32205-001	MIC RUBBER	
6	SC46330-001	CAP PLATE	
7	SC46329-001	PIPE	
8	SC46331-001	CAP RUBBER	
9	SC20698-001	LOWER HOLDER	
10	SC42550-011	C HOLDER	
11	SC32206-001	HOLDER RUBBER	
12	SC20697-001	HOLDER BASE	·
13	SC46224-021	N.PLATE/KAA90U	
S1	SC46327-001	SCREW(1)	
S2	SC46328-001	SCREW(2)	
S3	QYSDSP2006M	SCREW	M2 × 6
S4	QYSPSPL3025Z	SCREW	M3 x 25
S5	QYSDSF2005M	SCREW	M2 x 5
S6	QYSPSP2606M	SCREW	M2.6 × 6
S7	SC43390-002	SCREW	
W19	QYWSS256505N	WASHER	





5.2 CABINET ASSEMBLY M2

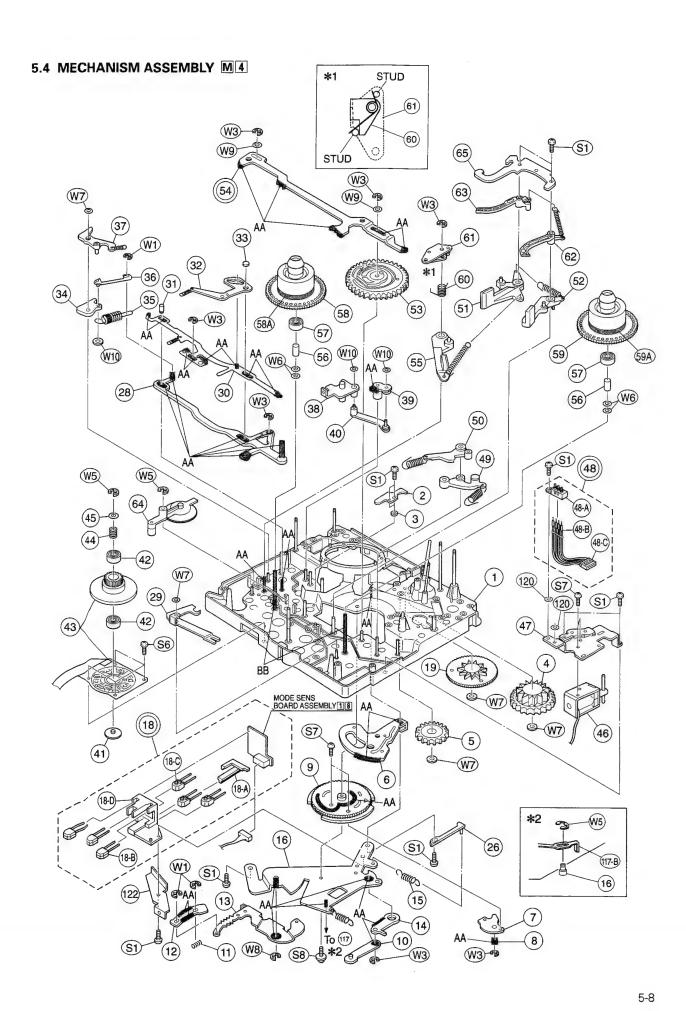


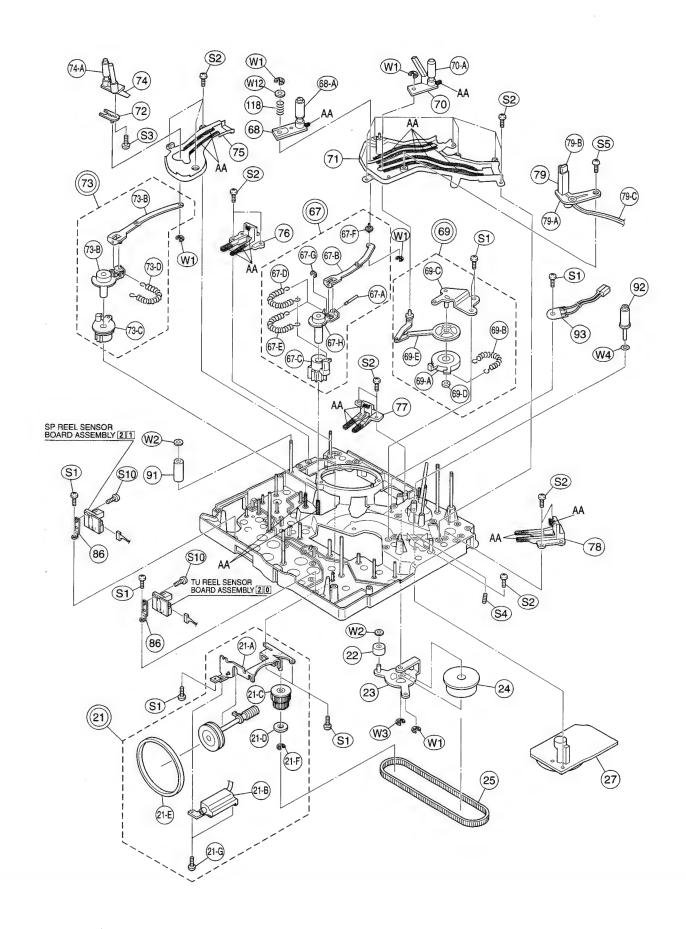
CHASSIS ASSEMBLY PARTS LIST M3

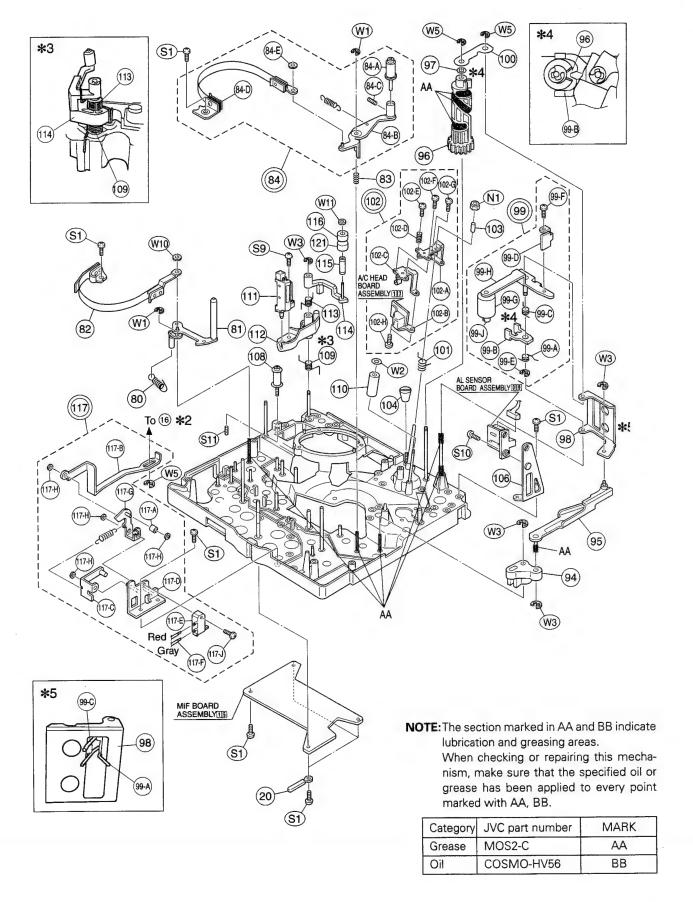
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M	3 1	IVI	IVI	1 1	1 1		ıl I	

Symbol No.	Part No.	Part Name	Description
1	SC10220-002	CENTER FRAME	(E/EC)
1	SC10220-011	CENTER FRAME	(U)
2	SC46240-001	BNC BRACKET	
3	QNZ0187-001	BNC CONNECTOR	TC IN/OUT,GEN
4	SC32173-004	CN BRACKET	
5	QNZ0187-001	BNC CONNECTOR	MONITOR OUT
6	SC46245-002	6P BRACKET	Month of the second
7	QNZ0260-001	RECEPTACLE(6S)	TO SETUP-BOX
10	PRD44897	STAY	10 02101 20%
11	PRD44893	HOLDER	
12	SC32175-001	P/R SHIELD(A)	
13		P/R SHIELD(B)	
15	SC46239-002	REAR N.PLATE	
16	SC46324-002	COLLAR	
17	PRD45133	COLLAR(2) ASSEMBLY	
	SC10228-001	HANDLE	
	SC20692-001	HANDLE COVER	
	SC46244-001	CN COVER	
20		PIN	
21	SC46310-001	SPACER	
	SC46311-001	L.E.D.	
23		L.E.D. L.E.D.MOUNT	
24	SM3512	SHOU	·
25	SC40886-001		
26		SPRING	
27	SC32163-002	VF BASE	
	SC46227-002	SLIDE PLATE	
29	SC45127-002	VF RING	
30	SC40465-045	STEEL BALL	
31	SC46371-001	SPRING	
	SC46235-002	ADJUST PLATE	
33	SCV0238-06S	CONNECTOR	
34	PRD31229-01-03	DOOR	
35	PRD43840-01-04	KNOB(DOOR)	
36	PRD30023-53	COMP.SPRING 53	
37			
	PRD31228-01-04	HOLDER(OPE)	
39		PLATE:	
40	PRD31233	KNOB(OPE)	AUD1/AUD2 IN
41	QNZ0207-001	RECEPTACLE(3S)	AUDI/AUDZ IN
	QNZ0249-001	DC IN CONN(4P)	
	QNZ0257-001	DC OUT CONN(4S)	
	QNZ0220-001	RECEPTACLE(5P)	
	SCV2631-001	FERRITE CORE	<alcd main="" to=""> CN44</alcd>
	PGW0206-140140	FFC WIRE	<alcolor <alcolor="" ==""> CN44 <alcolor> CN44 <alcolor> CN43</alcolor></alcolor></alcolor>
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	PGW0206-200120	FFC WIRE	<alcd ss="" to=""> CN55</alcd>
	PGW0206-140240	FFC WIRE	<cp main="" to=""> CN32</cp>
	SCV2803-2806B	FFC WIRE	<main pr="" to=""> CN56 <main ss="" to=""> CN46</main></main>
	SCV2803-4011B	FFC WIRE	<pre><pr ss="" to=""> CN46 </pr></pre>
	SCV2803-1404B	FFC WIRE	
	SCV2803-1804B	FFC WIRE	<pr l.drum="" to=""></pr>
	SCV2337-1017BD	FFC WIRE	<ss d.mda="" to="">CN53</ss>
	SCV2803-4011B	FFC WIRE	<ss mif="" to="">CN47</ss>
	PGW0206-070080	FFC WIRE	<ope mif="" to=""></ope>
	PDR2030A	DRUM FINAL ASSEMBLY	14 40050) ((5/50)
	QMF51A2-4R0-S	FUSE	4A,AC250V(E/EC)
	QMF51U1-4R0-S	FUSE	4A,AC125V (U)
	PU49485-4	WIRE CLAMP	
	PU49485-3	WIRE CLAMP	
∆ 63	SCV2823-00B	PS BOARD ASSEMBLY	

Symbol No.	Part No.	Part Name	Description
63A	SCV2908-001	CONNECTOR	
64	SC44556-011	TC.KNOB	
65	SC46333-001	SHEET	
	SC46332-001	WIRE CLAMP	
67	MLSC0692-001	WIRE KIT	
68	QQR0717-032	FERRITE CORE	
	QQR0895-011	FPC CORE	
	SC46380-001	BNC CUSHION	
71	SC46237-001	SHEET	
		FERRITE CORE	
72	QQR0947-001		
1	SC46324-001	COLLAR	
	SC32229-001	SHIELD PLATE	
1	PGZ02359	FERRITE BEADS	
1	SC46419-001	SHEET	
77	SC46419-002	SHEET	
78	SC46074-004	BKT SHEET	
	SC45563-003	SHEET	
3	SC45548-002	SHEET	
	SC46380-002	BNC CUSHION	
	SC44556-002	KNOB	
	QQR0490-001	FILTER	
- 1		BKT SHEET	
	SC46074-004		
85	QQR0988-002	FERITE CORE	
1	QQR0895-008	FPC CORE	
87	SCV2728-001	CLAMP FILTER	
88	SC46423-001	LABEL	(U)
89	QQR0765-001	FERRITE CORE	
91	SC46417-001	BRACKET	
92	SC46158-003	SHEET	
93	SC46158-002	SHEET	
	SC46442-001	SHIELD BRACKET (3)	
	SC46438-001	SHIELD PLATE (1)	
	SC46441-001	SHIELD BRACKET (2)	
97	SC46439-001	SHIELD PLATE (2)	
S1	QYSDSP2004Z	SCREW	M2 x 4
			M2 x 6
S2	QYSDSP2006M	SCREW	
	QYSDSP2606Z	SCREW	M2.6 × 6
	QYSDSP3004Z	SCREW	M3 × 4
S23		SCREW	M2 x 4
S24	QYSDSP4006M	SCREW	M4 x 6
	QYSPSP2606N	SCREW	M2.6 × 6
S27	QYSDSP2612Z	SCREW	M2.6 x 12
S28	QYSPSPD2005Z	SCREW	M2 x 5
S29	QYSDSP2605Z	SCREW	M2.6 x 5
S31		SCREW	M3 x 6
	QYSPSPT2030M	SCREW	M2 x 3.0
S46		SCREW	
S47		SCREW	M3 x 6
S48		SCREW	M4 x 45
S50		SCREW	M2 × 4
S54		SCREW	M4 x 10
	PRD30029-10	WASHER	01/
1	QYWBS285803N	T.LOCK WASHER	CV
	PRD30084-09	WASHER	
	SC46325-001	ABSORB SPACER	
W19	0070020001		
	SC46325-002	ABSORB SPACER	







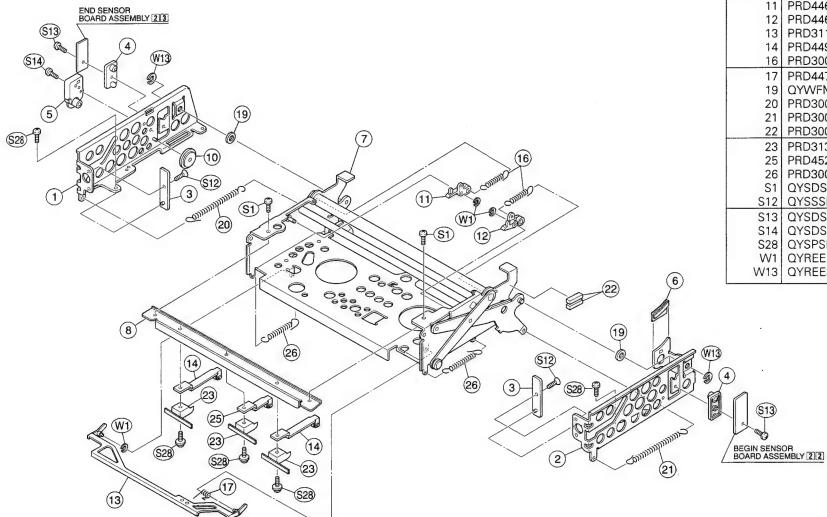
MECHANISM ASSEMBLY PARTS LIST M 4

	ANISM ASSEMBLY	1	M4MM
Symbol No.	Part No.	Part Name	Description
	PGS30280B	MECHANISM ASSEMBLY	
1 2	PRD10339A-07 PRD44995	MAIN DECK ASSEMBLY ADJUST PLATE	
3	PRD44141	SPACER	
4	PRD44573	P.I.GEAR	
5	PRD44574	C.I.GEAR	
6 7	PRD44578A PRD44862A	ARM GEAR(R) ASSEMBLY PIN PLATE ASSEMBLY	
8	PRD44865	ROLLER	
9	PRD20538-01-02	COTROL CAM	
10	PRD44713A	ROD	
11 12	PRD30023-56 PRD31117-01-03	COMP.SPRING 56 SLIDE GEAR	
13		A.GEAR(L) ASSEMBLY	
14	PRD44796A-01	P.C.ARM ASSEMBLY	
	PRD44838	TENSION SPRING	
16 18	PRD44958A PGS30258A	CAM BRACKET ASSEMBLY M.SENSOR ASSEMBLY	
18A	PRD31207	MODE SENSOR(2)	
18B	TLN117	L.E.D.	
18C	TPS622	TRANSISTOR MODE SENSOR(1)	
18D 19	PRD20539 PRD44572	CONNECT GEAR	
20	PU49485-3	WIRE CLAMP	
21	PGZ02533-02	L.MOTOR ASSEMBLY	
	PRD44560A-01	GEAR BKT.ASSEMBLY LOADING MOTOR	
21B	JV-1850 PRD44566	WORM WHEEL	
21D	PQM30018-54	SPACER	
	PRD45169	BELT	
21F	QYREE2000 QYSPSPL2003Z	E.WASHER SCREW	M2 x 3
21G	QYSPSPL2003Z	SCREW	M2 x 3
22	PRD44571	BAND ROLLER	
23	PRD44568A	B.R.ARM ASSEMBLY	
24 25		TIMING GEAR TIMING BELT	
26		ADJ.LEVER ASSEMBLY	
27	PGZ02191	CAPSTAN MOTOR	
28		S.PLATE ASSEMBLY	
29 30		SOLENOID LEVER BRAKE PLATE ASSEMBLY	
31	PRD44832	COLLAR 1	
32	PRD44956A	BRAKE ANGLE ASSEMBLY	
33		S.ADD LEVER	
34 35		TENSION SPRING	
	PRD44815A-01	T.ROD ASSEMBLY	
37		S.B.LEVER ASSEMBLY SUB ARM SUB ASSEMBLY	
	PRD44618A-01 PRD31128	GENEVA GEAR	
	PRD44627A	PUSH ARM ASSEMBLY	
	PRD44764	COLLAR	
42	PRD30021-14 PGZ02192	BALL BEARING REEL MOTOR	
43		COMP.SPRING 57	
45	QYWFM315413	PLASTIC WASHER	
46		SOLENOID ASSEMBLY SOLENOID RACKET	
47 48	PRD31125 PGS30299B	W SENSOR ASSEMBLY	
48A		W SENSOR	
48B	QXTE154-010	TUBE	
48C		CAS.SW WIRE	
49 50	PRD44959A-02 PRD44953A	T.S.L.SP.ASSEMBLY T.B.LEVER ASSEMBLY	
51		L.C.L.F ASSEMBLY	
52	PRD45007A	R.C.L.F ASSEMBLY	
53		2ND CAM DIR.PLATE ASSEMBLY	
54 55		SUB BREKE ASSEMBLY	

Symbol No.	Part No.	Part Name	Description
56		COLLAR	
57 58	PRD30021-13 PRD44518A	BALL BEARING REEL DISK ASSEMBLY	SUPPLY
58A	PRD44711	RUBBER TIRE	SUPPLY
59		REEL DISK ASSEMBLY	TAKE UP
59A	PRD44711 PRD44834	RUBBER TIRE TORSION SPRING	
60 61	PRD44635A	BAND HOLDER BKT	
62	PRD44954A-01	T.B.A.SP.ASSEMBLY	
63 64	PRD31131A-02 PGS30248A	S.B.ARM ASSEMBLY	
65	PRD31133-01-01	IDLER ASSEMBLY ARM GUIDE	
67	PGS30251A	L.ARM(R) ASSEMBLY	
67A 67B	PRD44537 PRD44545A	L.ARM SHAFT ARM(R) ASSEMBLY	
67C	PRD31109	L.GEAR(R)	
67D	PRD44542-02	TENSION SPRING	
67E 67F	PRD44542-03 PRD44550	TENSION SPRING STUD	
67G		WASHER	
67H	PRD44543A	L.ARM(R1) ASSEMBLY	
68 68A	PRD31173C PRD45090A-01	P.BASE(T) ASSEMBLY G.ROLLER ASSEMBLY	
69	PGS30252A	ARM(D) ASSEMBLY	
	PRD44558	GEAR	
69B 69C	PRD30024-74 PRD44471A-01	TENSION SPRING ARM(D) BRACKET	
69D	PQM30017-5	WASHER	
69E	PRD44551A	ARM(D1) ASSEMBLY	
	PRD31174A PRD44950A	P.BASE(D) ASSEMBLY G.ROLLER ASSEMBLY	
71	PRD10342-01-03	GUIDE RAIL(T)	
72	PRD44477A	BASE ASSEMBLY	
73 73B	PGS30250A-01 PRD45128A	L.ARM(L) ASSEMBLY L.ARM(L) ASSEMBLY	
73C	PRD31108A	LOADING GEAR(L)	
73D	PRD44542	TENSION SPRING	
74 74A	PRD31172B-04 PRD45090A-01	P.BASE(S) ASSEMBLY G.ROLLER ASSEMBLY	
75	PRD10341-01-03	GUIDE RAIL(S)	
	PRD31093 PRD31094	CATCHER(S) CATCHER(T)	
	PRD31095	CATCHER(I)	
	PGS30245A	CASS.LED.ASSEMBLY	
	PRD31104 LN59	LED HOLDER L.E.D.	
	MLSL045A	CASS.LED WIRE	
	PRD30024-83	TENSION SPRING	
	PRD45022A-01 PRD44722A-02	S.T.ARM ASSEMBLY TENSION BAND(S)	
83	PRD30023-59	COMP.SPRING 59	,
	PGS30257A PRD43631A	T.T.ARM ASSEMBLY GUIDE ROLLER	
	PRD44952A-01	T.T.ARM ASSEMBLY	
		SCREW	M2.6 x 5
		TENSION BAND(T) SLIT WASHER	
		SENSOR BRACKET	
	PRD44505	GUIDE ROLLER	
	PRD44403B QSD0002-001	DEW SENSOR	
94	PRD44600	JOINT ARM	
	PRD44603A-01 PRD20537	PINCH ROD ASSEMBLY CAM GEAR	
	QYWFM315450	PLASTIC WASHER	
98	PRD31221-01-01	P.LOCK LEVER	
	PGS30255A-01 PRD45001	P.ROLLER ASSEMBLY TORSION SPRING	
99B	PRD31148	ARM LIFTER	
99C	PRD45000	TORSION SPRING	

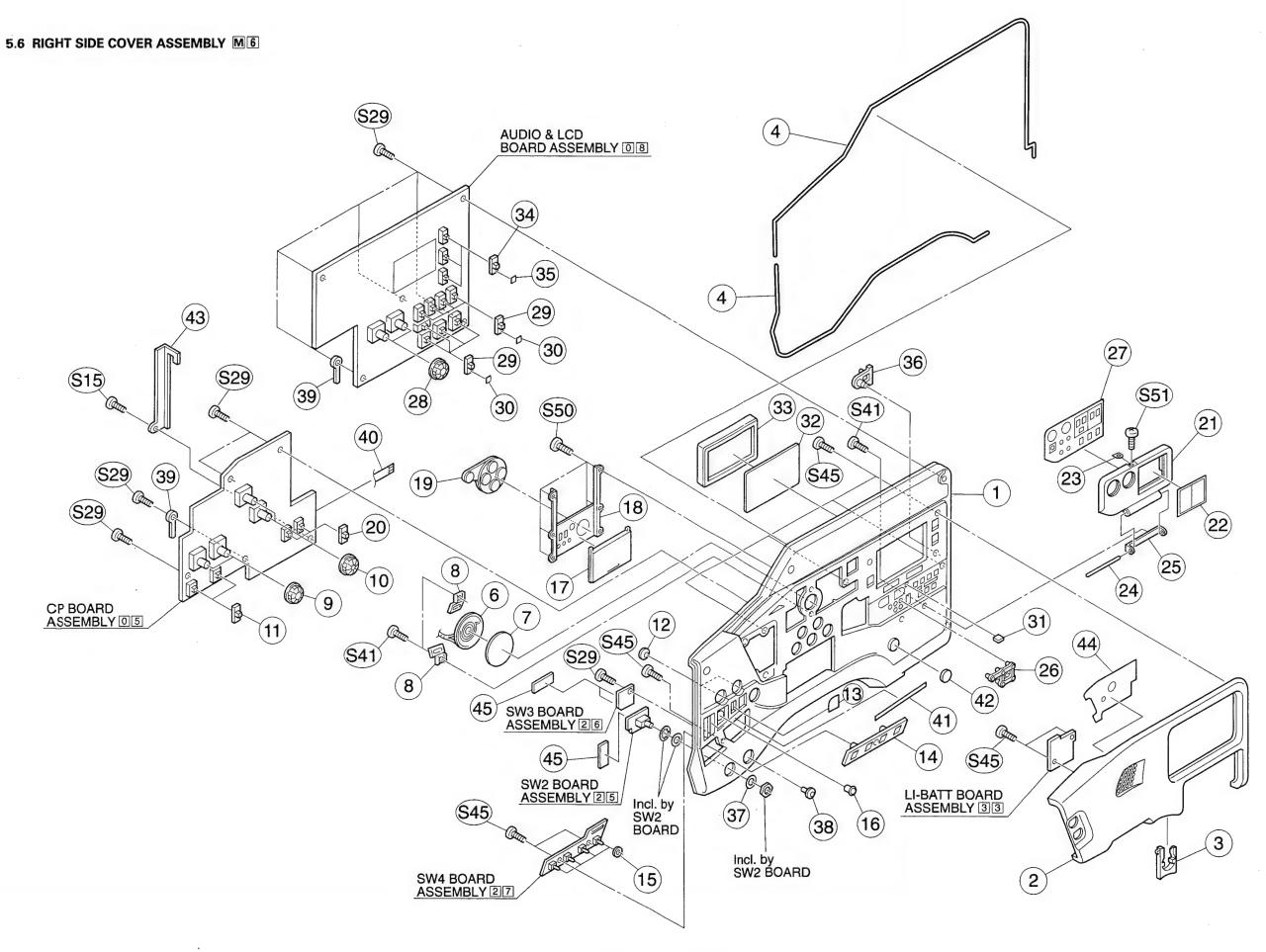
990 PR044744-01-01 SENSOR PLATE 999 OYSDSP20042 SCREW 996 PRD44991A PINCH ARM ASSEMBLY PINCH A	Symbol No.	Part No.	Part Name	Description
100 PRD44501-01-01 TORSION SPRING TORSION SPRING	99E 99F 99G	QYREE4000 QYSDSP2004Z PRD44991A	E WASHER SCREW PINCH ROLLER	M2 x 4
102C PRD44502A-02	100 101 102 102A	PRD44729 PRD44501-01-01 PGS30247A PRD31101	PLATE TORSION SPRING A/C HEAD ASSEMBLY	
102H	102C 102D 102E 102F	PRD44502A-02 PQM30002-197 QYSDSP2612Z PQ43687B	HEAD BASE ASSEMBLY COMP.SPRING 197 SCREW	
100	102H 103 104 106	QYSDSP2604Z PRD30026-38 PRD44241 PRD31156	SCREW COLLAR TAPER NUT SENSOR BRACKET	M2.6 x 4
114	109 110 111 112	PRD44498-01-01 PRD44505 PRD44399A PRD31099A-03	TORSION SPRING GUIDE ROLLER FE HEAD ASSEMBLY	
117B	114 115 116	PRD45102A PQ46418-1-2 PRD45003	H.C.ARM ASSEMBLY CLEANER ROLLER CLEANER 1	
117G	117B 117C 117D	PRD44586-01-01 PRD44591A-02 PRD44594A	EJECT ROD LOCK LEVER ASSEMBLY LOCK BKT.ASSEMBLY	
121 PRD45017 CLEANER 2 122 SC46440-001 SHIELD BRACKET (1) N1 PQ40353 NUT S1 QYSDSP2004Z SCREW M2 x 4 S2 QYSDSP2006M SCREW M1.7 x 40 S4 QYYASPF2603F SCREW M2.6 x 3 S5 QYSBSF2606Z SCREW M2.6 x 3 S5 QYSPSP2004Z SCREW M2.6 x 3 S6 QYSPSP2004Z SCREW M2.6 x 6 S6 QYSPSP2004Z SCREW M2 x 4 S7 QYSPSP2003Z SCREW M2 x 4 S7 QYSPSP2006Z SCREW M2 x 6 S9 SBSF2610Z SCREW M2 x 6 S9 SBSF2610Z SCREW M3 x 6 S10 QYSPSP13006Z SCREW M6 x 10 S10 QYSPSP13006Z SCREW M3 x 6 S11 PRD45104 SCREW W1 QYREE1500 E.WASHER W2 QQM30017-25 SLIT WASHER W3 QYREE2000 E.WASHER W4 PRD43925 RING W5 QYREE2500 E WASHER W6 PQM30018-33 WASHER	117G 117H 117J	PRD45005A PQM30017-25 QYSDSP2006M	NOSE.F.ASSEMBLY SLIT WASHER SCREW	M2 × 6
S2 QYSDSP2006M SCREW M1.7 x 40 S3 QYSPSPU1740M SCREW M1.7 x 40 S4 QYSSF2603F SCREW M2.6 x 3 S5 QYSBSF2606Z SCREW M2.6 x 6 S6 QYSPSP2004Z SCREW M2 x 4 S7 QYSPSPL2003Z SCREW M2 x 3 S8 QYSPSPD2006Z SCREW M2 x 6 S9 SBSF2610Z SCREW M6 x 10 S10 QYSPSPL3006Z SCREW M3 x 6 S11 PRD45104 SCREW M3 x 6 W1 QYREE1500 E.WASHER WASHER W4 PRD43925 RING RING W5 QYREE2500 E.WASHER W6 PQM30018-33 WASHER	121 122 N1	PRD45017 SC46440-001 PQ40353	CLEANER 2 SHIELD BRACKET (1) NUT	M2 x 4
S8 QYSPSPD2006Z SCREW M2 x 6 S9 SBSF2610Z SCREW M6 x 10 S10 QYSPSPL3006Z SCREW M3 x 6 S11 PRD45104 SCREW M3 x 6 W1 QYREE1500 E.WASHER W2 PQM30017-25 SLIT WASHER W3 QYREE2000 E.WASHER W4 PRD43925 RING W5 QYREE2500 E WASHER W6 PQM30018-33 WASHER	S3 S4 S5 S6	QYSPSPU1740M QYYASPF2603F QYSBSF2606Z	SCREW SCREW SCREW SCREW	M2 x 6 M1.7 x 40 M2.6 x 3 M2.6 x 6
W2 PQM30017-25 SLIT WASHER W3 QYREE2000 E.WASHER W4 PRD43925 RING W5 QYREE2500 E WASHER W6 PQM30018-33 WASHER	S8 S9 S10 S11	QYSPSPD2006Z SBSF2610Z QYSPSPL3006Z PRD45104	SCREW SCREW SCREW SCREW	M2 x 6 M6 x 10
	W2 W3 W4 W5	PQM30017-25 QYREE2000 PRD43925 QYREE2500	SLIT WASHER E.WASHER RING E WASHER	
W8 OYREE4000 E WASHER W9 QYWFM264725 PLASTIC WASHER W10 PQM30017 SLIT WASHER W12 QYWFM214013 PLASTIC WASHER	W7 W8 W9 W10	PQM30017-22 QYREE4000 QYWFM264725 PQM30017	WASHER E WASHER PLASTIC WASHER SLIT WASHER	

5.5 CASSETTE HOUSING ASSEMBLY M 5



CASSETTE HOUSING ASSEMBLY PARTS LIST M 5			M 5 M M
Symbol No.	Part No.	Part Name	Description
	PGS30329B-01	C.HOUSING ASSEMBLY	
1	PRD44690A	BRACKET(L) ASSEMBLY	
2	PRD44695A-02	BRACKET(R) ASSEMBLY	
3	PRD44694-01-01	CASSETTE GUIDE	
4	PRD44704	SENSOR BRACKET	
5	PU56781	DAMPER	
6	PQ42384-1-3	LID GUIDE	
7	PRD31135A-03	C.HOUSING ASSEMBLY	
8	PRD31274-01-02	TOP PLATE	
10	PRD44696	DAMPER GEAR	
11	PRD44697	HOLD LEVER(L)	
12	PRD44698	HOLD LEVER(R)	
13		L.LEVER ASSEMBLY	
14	PRD44986A	SPRING PLATE	
16		TENSION SPRING	
17	PRD44702	TORSION SPRING	
19	QYWFM416550	PLASTIC WASHER	
20	PRD30024-72	TENSION SPRING	
21	PRD30024-95	TENSION SPRING	
22	PRD30030-162	PAD	
23	PRD31343	C.GUIDE 2	
25	PRD45217A	S.PLATE 2 ASSEMBLY	
26	PRD30024-103	TENSION SPRING	
S1	QYSDSP2004Z	SCREW	M2 x 4
S12	QYSSSP2004M	SCREW	M2 x 4
S13	QYSDSP2008Z	SCREW	M2 x 8
S14	QYSDSP2006Z	SCREW	M2 x 6
S28		SCREW	M2 x 5
W1	QYREE1500	E.RING	
W13	QYREE3000	E.RING	

5-11

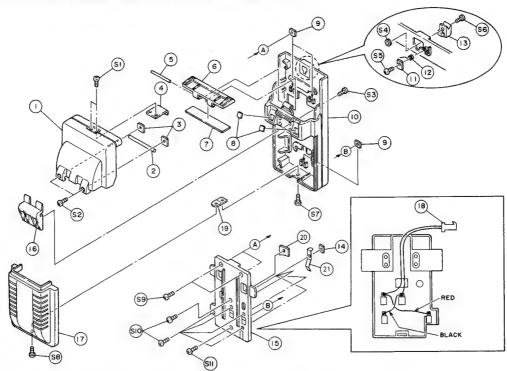


■ RIGHT SIDE COVER ASSEMBLY PARTS LIST M 6

M	6	M	M		
IAI		IAI	141		

Symbol No.	Part No.	Part Name	Description
1	SC10223-001	R.SIDE COVER	(E/EC)
٠,	SC10223-001	R. SIDE COVER	(U)
2		CHEEK PAD	(6)
3		BATTERY HOLDER	
4		GASKET	
6		SPEAKER	
7		SHEET	
8		SP BRACKET	
9		VR KNOB(2)	
10		VR KNOB	
11	SC44556-002	KNOB	
12		KNOB	
13		LABEL	
14		SW.NAME PLATE	
15		RUBBER	
16		LED LENS	
17		SLIDE COVER	
18		OPERATION PLATE	(E/EC)
	SC32167-002	OPERATION PLATE	(U)
19		OPERATION CAP	(0)
20		KNOB	
21		PANEL COVER	(E/EC)
	SC20690-003	PANEL COVER	(U)
22		PANEL WINDOW	
23		PANEL PLATE	
24		PANEL SHAFT	
25		SHAFT HOLDER	
26		PANEL KNOB	
27		AUDIO PANEL	(E/EC)
	SC32170-003	AUDIO PANEL	(U)
28		VOLUME KNOB	
	PRD43835	KNOB(OPE)	
30		KNOB PLATE	
31	SC46208-002	MAGNET	
32	SC46400-001	PLATE(LCD)	
33	SC46236-002	LCD CUSHION	
34		KNOB	
35	SC46397-001	KNOB PLATE	
36	SC46238-001	SELECT KNOB	
37	QYWWS629205Z	WASHER	
38	SC44828-002	SWITCH CAP	
	PU49485-4	WIRE CLAMP	
1 40	PGW0206-040100	FFC WIRE	<alcd cp="" to=""></alcd>
41	SC46344-002	NAME PLATE	
42	SC46357-001	CUSHION	
43	SC46334-001	CP BRACKET	
44	SC32202-001	ABSORB SHEET(R)	
	PRD30030-162	PAD	
	QYSDSP2606Z	SCREW	M2.6 x 6
S29	QYSDSP2605Z	SCREW	M2.6 x 5
	QYSDSP2604M	SCREW	M2.6 x 4
	QYSDSF2606Z	SCREW	M2.6 x 6
	QYSDSP2004M	SCREW	M2 x 4
S51		SCREW	M2 x 2.5

5.7 BATTERY HOLDER ASSEMBLY M8 (For DY-90U/EC/EC(K))



■ BATTERY HOLDER ASSEMBLY PART LIST M 9 (For DY-90U/EC/EC(K))

BATTE Symbol		David Name		locarintian
No.	Part No.	Part Name		escription
1	SC20476-011	B.H.COVER(1)		
2	SC45154-001	SHAFT		
3	PRD30955-02	PLATE		
4	PRD30955-05	ADJUST PLATE		
5	SC44805-001	SHAFT		
6	SC31319-011	GUIDE		
7	SC44869-006	CUSHION		
8	SC45155-001	CUSHION	•	
9	SC44899-002	NUT		
10	SC10156-011	BAT.HOLDER BASE		
11	SC43571-002	BRACKET		
12	SC43568-001	SPRING		
13	SC43570-001	LOCK KNOB		
14 15	SC44886-001 SC20478-004	PLATE TERMINAL COVER		
16	SC31501-011	SHAFT HOLDER		
17	SC20477-011	B.H.COVER(2) WIRE ASSEMBLY		
18 19		NUT.PLATE		
20		ADJUST PLATE		
21	SC45150-002	PLATE		
S1	QYSPSPT2650M	SCREW	M2.6 x 5.0	
S2	1	SCREW	M2.6 x 6	
S3		SCREW	M2.6 x 5	
S4		NUT	WIZIO X G	
S5		SCREW	M2 x 5	
S6		SCREW	M2 × 6	
S7	QYSDSP3004N	SCREW	M3 x 4	
S8		SCREW	M3 x 5	
S9		SCREW	M3 x 5	
S10	QYSSSPT2040M	SCREW	M2 × 4.0	

SECTION 6 ELECTRICAL PARTS LIST

SAFETY PRECAUTION:

Parts identified by the \triangle symbol are critical for safety. Replace only with specified parts numbers. For maximum reliability and performance, all other replacement parts should be identical to those specified.

NOTE:

- Parts not denoted by parts numbers are not supplied by JVC.
- Abbreviations in this list are as follows:

RESISTORS

In the "Description" column:

All resistance values are in ohms (Ω). k expresses kilo-ohm (1 000 ohms, k Ω). M expresses mega-ohm (10⁶ ohms, M Ω).

In the "Parts Name" column:

CAR.RESISTOR : Carbon Resistor

C.M.F.RESISTOR: Constant Metalized Film Resistor

COMP.RESISTOR: Composition Resistor

FUSI.RESISTOR : Fusible Resistor
M.F.RESISTOR : Metal Film Resistor
M.G.RESISTOR : Metal Graze Resistor
M.P.RESISTOR : Metal Plate Resistor

O.M.F.RESISTOR: Oxide Metalized Film Resistor

TRIM.RESISTOR: Trimerer Resistor

U.F.RESISTOR : Non-inflammable Resistor

VAL.RESISTOR : Valiable Resistor W.W.RESISTOR : Wire Wound Resistor

CAPACITORS

In the "Description" column:

All capacitance values are in microfarad (μ F) unless

otherwise indicated.

p expresses picofarad (10⁻¹² farad,pF).

In the "Parts Name" column:

CER.CAPACITOR : Ceramic Capacitor

E.CAPACITOR : Electrolytic Capacitor

FILM CAPACITOR: Film Capacitor

M.F.CAPACITOR : Metalized Film Capacitor

MICA CAPACITOR: Mica Capacitor

MPP CAPACITOR: Metalized PolyPropylene Capacitor MPPS CAPACITOR: Metalized PolyPhenylene Sulfied film

Capacitor

M.M.CAPACITOR : Metalized Mylar Capacitor

MYLAR CAPACITOR: Mylar Capacitor

N.P.CAPACITOR : Non-Poler electrolytic Capacitor

P.P.CAPACITOR : PolyPropylene Capacitor

PPS CAPACITOR : PolyPhenylene Sulfied film Capacitor

P.S.CAPACITOR : PolyStyrene Capacitor
TAN.CAPACITOR : Tantal Capacitor
TRIM.CAPACITOR : Trimer Capacitor
VAL.CAPACITOR : Valiable Capacitor

Note: In the "Description" column of the parts list, (U) means the parts for the U version while (E) is for the E version.

Symbol No.	Part No.	Part Name	Description		
IC1	SCV1585-064	I.C.(M)	JVC	(U)	for U version
	SCV1585-067	I.C.(M)	JVC	(E)	for E version

6.1 DR BOARD ASSEMBLY PARTS LIST 0 1

SCK2524-01-U0A(U) SCK2524-01-P0A(E)

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U	111		1 1	1 [1 1	t

Symbol No.	Part No.	Part Name	Description
IC1 IC2 IC3 IC4 IC5 IC6 IC7 IC8 IC9 IC10	UPD9438BGK-BE9 JCS0028 TC74HC04AF-X UPC78L05T-X TC74VHC08FT-X TC75H86FU-X TC75H32FU-X TC7S04F-X TC7SH32FU-X TC7SH32FU-X	I.C.(M)	NEC JVC TOSHIBA NEC TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA
IC11 IC12 IC14 IC16 IC17 IC18 IC19 IC101 IC102 IC103	TC7S08F-X MB88345PF TC4S11F-X TC4S81F-X TC7S04F-X TC7S04F-X TC7S04F-X AD8011AR-X TC4W53F-X AD8041AR-XE	I.C.(M)	TOSHIBA FUJITSU TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA ANALOG DEVICES TOSHIBA ANALOG DEVICES
IC104 IC201 IC202 IC203 IC204 IC301 IC302 IC303 IC401 IC402	LMC6082IM-X AD8011AR-X TC4W53F-X AD8041AR-XE LMC6082IM-X AD8011AR-X TC4W53F-X AD8041AR-XE NJM062M-X TC4S66F-X	I.C.(M)	NATIONAL SEMICO ANALOG DEVICES TOSHIBA ANALOG DEVICES NATIONAL SEMICO ANALOG DEVICES TOSHIBA ANALOG DEVICES JRC TOSHIBA
IC403 IC502 IC503 IC601 IC602 IC603 IC701 IC702 IC703 IC802	NJM062M-X TC4S66F-X NJM062M-X NJM062M-X TC4S66F-X NJM062M-X NJM062M-X UPD16510GR-X UPD16510GR-X UPD16510GR-X UPD16510GR-X	I.C.(M)	JRC TOSHIBA JRC JRC TOSHIBA JRC JRC JRC JRC JRC NEC NEC
IC803 IC901 IC902 IC903	UPD16510GR-X NJM062M-X UPD16510GR-X UPD16510GR-X	I.C.(M) I.C.(M) I.C.(M) I.C.(M)	NEC JRC NEC NEC
Q1 Q3 Q4 Q5 Q6 Q7 Q8 Q35 Q101 Q103	DTA124EUA-X MSC3930/B/-X 2SB1219/QR/-X 2SD1820/QR/-X 2SD1820/QR/-X 2SD1820/QR/-X 2SB1219/QR/-X 2SB1219/QR/-X 2SA1532/BC/-X	TRANSISTOR	ROHM MOTOROLA MATSUSHITA
Q104 Q105 Q106 Q107 Q201 Q203 Q204 Q205 Q206 Q207	3SK157/4-6/-W 2SA1532/BC/-X MSC3930/B/-X 3SK157/4-6/-W 2SA1532/BC/-X 2SA1532/BC/-X 3SK157/4-6/-W 2SA1532/BC/-X MSC3930/B/-X 3SK157/4-6/-W	FET TRANSISTOR TRANSISTOR FET TRANSISTOR TRANSISTOR FET TRANSISTOR TRANSISTOR FET	NEC MATSUSHITA MOTOROLA NEC MATSUSHITA MATSUSHITA NEC MATSUSHITA MOTOROLA NEC
Q301 Q303 Q304 Q305 Q306 Q307 Q701 Q702	2SA1532/BC/-X 2SA1532/BC/-X 3SK157/4-6/-W 2SA1532/BC/-X MSC3930/B/-X 3SK157/4-6/-W 2SA1462/3-4/-X 2SC3735/4-5/-X	TRANSISTOR TRANSISTOR FET TRANSISTOR TRANSISTOR FET TRANSISTOR TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA NEC MATSUSHITA MOTOROLA NEC NEC NEC

Symbol No.	Part No.	Part Name	Description
Q801	2SA1462/3-4/-X	TRANSISTOR	NEC
Q802	2SC3735/4-5/-X	TRANSISTOR	NEC
Q901	2SA1462/3-4/-X	TRANSISTOR	NEC
Q902	2SC3735/4-5/-X	TRANSISTOR	NEC
D2 D3 D6 D7 D403 D503 D603 D701 D702 D703	MA142A-X MA142WA-X MA142WA-X MA142WA-X MA742-X MA742-X MA742-X MA143A-X MA142WA-X MA142WA-X	DIODE	MATSUSHITA
D704 D705 D801 D802 D803 D804 D805 D902 D904 D905	MA742-X MA742-X MA143A-X MA142WA-X MA142WA-X MA742-X MA742-X MA742-X MA742-X MA742-X MA742-X	DIODE	MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA
R1	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W (E)
R2	NRSA63J-0R0X		0 1/16W
R4	NRSA63D-331X		330 1/16W
R5	NRSA63D-561X		560 1/16W
R6	NRSA63D-101X		100 1/16W
R7	NRSA63D-221X		220 1/16W
R8	NRSA63D-220X		22 1/16W
R9	NRSA63D-101X		100 1/16W
R12	NRSA63D-471X		470 1/16W
R13	NRSA63D-101X		100 1/16W
R14	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R15	NRSA63D-220X		22 1/16W
R16	NRSA63D-220X		22 1/16W
R17	NRSA63D-220X		22 1/16W
R18	NRSA63J-0R0X		0 1/16W
R19	NRSA63D-103X		10k 1/16W
R20	NRSA63D-0R0X		0 1/16W
R21	NRSA63D-330X		33 1/16W
R22-	NRSA63D-151X		150 1/16W
R23	NRSA63J-0R0X		0 1/16W
R24 R25 R26 R27 R28 R29 R30 R31 R32 R33	NRSA63D-563X NRSA63D-333X NRSA63D-330X NRSA63D-930X NRSA63D-393X NRSA63D-333X NRSA63D-104X NRSA63D-102X NRSA63D-102X NRSA63D-102X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	56k 1/16W 33k 1/16W 33 1/16W 0 1/16W 39k 1/16W 33k 1/16W 100k 1/16W 22k 1/16W 1k 1/16W
R34 R35 R37 R39 R42 R44 R45 R46 R47	NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63D-0R0X NRSA63D-272X NRSA63D-751X NRSA63D-103X	M.G.RESISTOR	0 1/16W 0 1/16W 0 1/16W 0 1/16W 0 1/16W 0 1/16W 0 1/16W 0 1/16W (E) 2.7k 1/16W 750 1/16W 10k 1/16W
R49	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R50	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R51	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R52	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R53	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R54	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W

Symbol No.	Part No.	Part Name	Description
R55 R56 R57 R58 R59	NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63D-181X NRSA63J-0R0X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	0 1/16W 0 1/16W 0 1/16W 180 1/16W 0 1/16W
R60 R61 R62 R63 R64 R65 R66 R67 R68 R69	NRSA63D-221X NRSA63D-223X NRSA63J-4R7X NRSA63D-103X NRSA63D-102X NRSA63D-822X NRSA63D-123X NRSA63D-123X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-222X	M.G.RESISTOR	220 1/16W 22k 1/16W 4.7 1/16W 10k 1/16W 1k 1/16W 8.2k 1/16W 12k 1/16W 10 1/16W 10 1/16W 2.2k 1/16W
R70 R71 R72 R73 R74 R75 R76 R77 R78	NRSA63D-153X NRSA63D-103X NRSA63D-822X NRSA63D-123X NRSA63D-103X NRSA63D-472X NRSA63D-183X NRSA63D-183X NRSA63D-392X NRSA63D-223X NRSA63D-223X	M.G.RESISTOR	15k 1/16W 10k 1/16W 8.2k 1/16W 12k 1/16W 10k 1/16W 4.7k 1/16W 18k 1/16W 3.9k 1/16W 22k 1/16W 33k 1/16W
R80 R81 R82 R90 R91 R92 R101 R102 R103 R104	NRSA63D-333X NRSA63D-822X NRSA63D-562X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63D-221X NRSA63D-561X NRSA63D-473X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR CAR.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	33k 1/16W 8.2k 1/16W 5.6k 1/4W 0 1/16W 0 1/16W 0 1/16W 220 1/16W 560 1/16W 47k 1/16W 22k 1/16W
R105 R106 R107 R110 R111 R112 R113 R114 R115 R116	NRSA63D-221X NRSA63D-102X NRSA63D-301X NRSA63D-680X NRSA63D-101X NRSA63D-220X NRSA63D-272X NRSA63D-181X NRSA63D-102X NRSA63D-102X NRSA63D-472X	M.G.RESISTOR	220 1/16W 1k 1/16W 300 1/16W 68 1/16W 100 1/16W 22 1/16W 2.7k 1/16W 180 1/16W 1k 1/16W 4.7k 1/16W
R117 R118 R119 R120 R122 R124 R201 R202 R203 R204	NRSA63D-103X NRSA63D-103X NRSA63D-334X NRSA63J-0R0X NRSA63D-104X NRSA63D-823X NRSA63D-221X NRSA63D-561X NRSA63D-473X NRSA63D-223X	M.G.RESISTOR	10k 1/16W 10k 1/16W 330k 1/16W 0 1/16W 100k 1/16W 82k 1/16W 220 1/16W 560 1/16W 47k 1/16W 22k 1/16W
R205 R206 R207 R210 R211 R212 R213 R214 R215 R216	NRSA63D-221X NRSA63D-102X NRSA63D-301X NRSA63D-680X NRSA63D-101X NRSA63D-220X NRSA63D-272X NRSA63D-181X NRSA63D-102X NRSA63D-102X NRSA63D-472X	M.G.RESISTOR	220 1/16W 1k 1/16W 300 1/16W 68 1/16W 100 1/16W 22 1/16W 22,7k 1/16W 180 1/16W 1k 1/16W 4.7k 1/16W
R217 R218 R219 R220 R223 R224 R226 R227	NRSA63D-103X NRSA63D-103X NRSA63D-334X NRSA63D-00X NRSA63D-333X NRSA63D-823X NRSA63D-473X NRSA63D-122X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	10k 1/16W 10k 1/16W 330k 1/16W 0 1/16W 33k 1/16W 82k 1/16W 47k 1/16W 1.2k 1/16W

Symbol No.	Part No.	Part Name	Description
R228 R250 R260	NRSA63D-243X NRSA63D-472X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	24k 1/16W 4.7k 1/16W 22k 1/16W
R251 R252 R301 R302 R303 R304 R305 R306 R307 R310	NRSA63D-392X NRSA63D-103X NRSA63D-221X NRSA63D-561X NRSA63D-473X NRSA63D-223X NRSA63D-221X NRSA63D-102X NRSA63D-102X NRSA63D-301X NRSA63D-680X	M.G.RESISTOR	3.9k 1/16W 10k 1/16W 220 1/16W 560 1/16W 47k 1/16W 22k 1/16W 22k 1/16W 300 1/16W 68 1/16W
R311 R312 R313 R314 R315 R316 R317 R318 R319 R320	NRSA63D-101X NRSA63D-220X NRSA63D-272X NRSA63D-181X NRSA63D-102X NRSA63D-472X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-334X NRSA63J-0R0X	M.G.RESISTOR	100 1/16W 22 1/16W 2.7k 1/16W 180 1/16W 1k 1/16W 4.7k 1/16W 10k 1/16W 10k 1/16W 330k 1/16W 0 1/16W
R324 R360 R402 R403 R404 R406 R407 R408 R412 R413	NRSA63D-823X NRSA63D-223X NRSA63D-224X NRSA63D-274X NRSA63D-124X NRSA63D-124X NRSA63D-124X NRSA63D-101X NRSA63D-101X NRSA63D-183X NRSA63D-274X	M.G.RESISTOR	82k 1/16W 22k 1/16W 220k 1/16W 270k 1/16W 120k 1/16W 120k 1/16W 120k 1/16W 100 1/16W 18k 1/16W 270k 1/16W
R414 R415 R416 R417 R418 R419 R420 R421 R422 R423	NRSA63D-363X NRSA63D-102X NRSA63D-104X NRSA63D-104X NRSA63D-821X NRSA63D-821X NRSA63D-822X NRSA63D-243X NRSA63D-102X NRSA63D-102X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	36k 1/16W 1/16W 100k 1/16W 100k 1/16W 820 1/16W 820 1/16W 82k 1/16W 24k 1/16W
R424 R425 R426 R427 R503 R504 R505 R506 R507 R508	NRSA63D-752X NRSA63D-822X NRSA63D-823X NRSA63D-102X NRSA63D-124X NRSA63D-124X NRSA63D-334X NRSA63D-124X NRSA63D-124X NRSA63D-101X	M.G.RESISTOR	7.5k 1/16W 8.2k 1/16W 82k 1/16W 1k 1/16W 270k 1/16W 120k 1/16W 120k 1/16W 120k 1/16W 330k 1/16W 330k 1/16W 100 1/16W
R512 R513 R514 R515 R516 R517 R518 R519 R520 R521	NRSA63D-183X NRSA63D-274X NRSA63D-363X NRSA63D-102X NRSA63D-104X NRSA63D-104X NRSA63D-821X NRSA63D-821X NRSA63D-821X NRSA63D-822X NRSA63D-822X	M.G.RESISTOR	18k 1/16W 270k 1/16W 36k 1/16W 1k 1/16W 100k 1/16W 820 1/16W 820 1/16W 820 1/16W 82k 1/16W 39k 1/16W
R522 R524 R525 R526 R527 R602 R603 R604 R606	NRSA63D-102X NRSA63D-752X NRSA63D-153X NRSA63D-304X NRSA63D-102X NRSA63D-102X NRSA63D-224X NRSA63D-274X NRSA63D-124X NRSA63D-124X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	1k 1/16W 7.5k 1/16W 15k 1/16W 300k 1/16W 1k 1/16W 220k 1/16W 270k 1/16W 120k 1/16W 120k 1/16W

Symbol No.	Part No.	Part Name	De	scription	Symbol No.	Part No.	Part Name		Description
R607 R608	NRSA63D-124X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	120k 100	1/16W 1/16W	C24 C25	NCB31CK-473X NEH91CM-106X	CER.CAPACITOR E.CAPACITOR	0.047	16V 16V
	1		18k	1/16W	C26	NBE21EM-105X	TAN.CAPACITOR	1	25V
R612	NRSA63D-183X	M.G.RESISTOR			C27	NEH91CM-476X	E.CAPACITOR	47	16V
R613	NRSA63D-274X	M.G.RESISTOR	270k	1/16W				220	10V
R614	NRSA63D-363X	M.G.RESISTOR	36k	1/16W	C28	NEH71AM-227X	E.CAPACITOR		
R615	NRSA63D-102X	M.G.RESISTOR	1k	1/16W	C29	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R616	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C30	NBE71CM-476X	TAN.CAPACITOR	47	16V
R617	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C31	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R618	NRSA63D-821X	M.G.RESISTOR	820	1/16W	C32	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R619	NRSA63D-821X	M.G.RESISTOR	820	1/16W	C33	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R620	NRSA63D-822X	M.G.RESISTOR	8.2k	1/16W	C34 C35	NCB31CK-473X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	0.047 0.047	16V 16V
R621	NRSA63D-183X	M.G.RESISTOR	18k	1/16W			TAN.CAPACITOR	10	35V
R622	NRSA63D-102X	M.G.RESISTOR	1k	1/16W	C36	NBE71VM-106X		47	16V
R623	NRSA63D-183X	M.G.RESISTOR	18k	1/16W	C37	NBE71CM-476X	TAN.CAPACITOR	10	16V
R624	NRSA63D-752X	M.G.RESISTOR	7.5k	1/16W	C38	NBE41CM-106X	TAN.CAPACITOR		16V
R625	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C39	NEH71CM-337X	E.CAPACITOR	330	
R626	NRSA63J-105X	M.G.RESISTOR	1M	1/16W	C40	NEH71CM-337X	E.CAPACITOR	330	16V
R627	NRSA63D-102X	M.G.RESISTOR	1k	1/16W	C41	NBE71CM-476X	TAN.CAPACITOR	47	16V
R703	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C42	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
R704	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C43	NEH90JM-107X	E.CAPACITOR	100	6.3V
R705	NRSA63J-105X	M.G.RESISTOR	1M	1/16W	C44	NBE20JM-106X	TAN.CAPACITOR	10	6.3V 16V
R706	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C45	NEH91CM-106X	E.CAPACITOR	10	
R707	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C46	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R708	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C47	NEH91CM-106X	E.CAPACITOR	10	16V
R709	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C48	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R710	NRSA63D-560X	M.G.RESISTOR	56	1/16W	C49	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
R711	NRSA63D-560X	M.G.RESISTOR	56	1/16W	C50	NBE40GM-476X	TAN.CAPACITOR	47	
R779	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C51	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
R803	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C52	NBE41CM-156X	TAN.CAPACITOR	15	16V
R804	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C53	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R805	NRSA63J-105X	M.G.RESISTOR	1M	1/16W	C54	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R806	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C55	NBE21EM-105X	TAN.CAPACITOR	1	25V
R807	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C56	NDC31HJ-270X	CER.CAPACITOR	27p	50V
R808	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C57	NDC31HJ-680X	CER.CAPACITOR	68p	50V
R809	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C58	NEH61EM-106X	E.CAPACITOR	10	25V
R810	NRSA63D-560X	M.G.RESISTOR	56	1/16W	C84	NBE21EM-105X	TAN.CAPACITOR	1	25V
R811	NRSA63D-560X	M.G.RESISTOR	56	1/16W	C98	NBE41AM-226X	TAN.CAPACITOR	22	10V
R903	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C102	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R904	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C103	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R905	NRSA63J-105X	M.G.RESISTOR	1M	1/16W	C104	NDC31HJ-680X	CER.CAPACITOR	68p	50V
R906	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C105	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R907	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C106	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R908	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C107	NCB21EK-104X	CER.CAPACITOR	0.1	25V
R910	NRSA63D-560X	M.G.RESISTOR	56	1/16W	C108	NCB31CK-473X	CER.CAPACITOR	0.047	16V
R911	NRSA63D-560X	M.G.RESISTOR	56	1/16W	C109	NCB31CK-104X	CER.CAPACITOR	0.1	16V
1.07.	THICAGOD GOOK	141.011.120101011		.,	C113	NCB31CK-473X	CER.CAPACITOR	0.047	16V
1					C114	NCB31CK-473X	CER.CAPACITOR	0.047	16V
VR201	NVP1416-502X	TRIM.RESISTOR	5k	1	C120	NDC31HJ-560X	CER.CAPACITOR	56p	50V
		TRIM.RESISTOR	5k		C124	NCB31CK-473X	CER.CAPACITOR	0.047	16V
V11.001	NVI 1410-302X	7111101.1120101011	J.K		C202	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C1	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C203	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C2	NBE21AM-106X	TAN.CAPACITOR	10	10V	C203	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C3			27p	50V	C204	NCB31CK-473X	CER.CAPACITOR	0.047	16V
	NDC31HJ-270X	CER.CAPACITOR					CER.CAPACITOR	0.047	16V
C4	NDC31HJ-270X	CER.CAPACITOR	27p	50V	C206	NCB31CK-473X			25V
C5	NDC31HJ-270X	CER.CAPACITOR	27p	50V	C207	NCB21EK-104X	CER.CAPACITOR	0.1	16V
C6	NDC31HJ-270X	CER.CAPACITOR	27p	50V	C208	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C7	NDC31HJ-270X	CER.CAPACITOR	27p	50V	C209	NCB31CK-104X	CER.CAPACITOR	0.1	
C8	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C213	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C9	NBE71CM-476X	TAN.CAPACITOR	47	16V	C214	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C10	NBE71CM-476X	TAN.CAPACITOR	47	16V	C220	NDC31HJ-560X	CER.CAPACITOR	56p	50V
C11	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C302	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C12	NBE21VM-104X	TAN.CAPACITOR	0.1	35V	C303	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C13	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C304	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C14	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C305	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C15	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C306	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C16	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C307	NCB21EK-104X	CER.CAPACITOR	0.1	25V
C17	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C308	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C18	NCB11CK-105X	CER.CAPACITOR	1	16V	C309	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C19	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C320	NDC31HJ-560X	CER.CAPACITOR	56p	50V
C20	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C401	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C21	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	C403	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C22	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C404	NFV41CJ-104X	FILM CAPACITOR	0.1	16V
C23	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C501	NCB31EK-103X	CER.CAPACITOR	0.01	25V
						.1.			

6.2 ISB BOARD ASSEMBLY PARTS LIST 02 SCK2523-01-00A

						BOARD ASSE! (2523-01-00A	MBLY PARTS LIST	7 0 2 0 2	
Symbol No.	Part No.	Part Name	Descri	ption	Symbol No.	Part No.	Part Name		cription
C503 C504 C601 C603 C604 C701 C702 C703 C704 C706 C707 C801 C802 C803 C804 C806 C807 C808 C901 C902 C903 C904 C905 C906	NCB31CK-473X NFV41CJ-104X NCB31EK-103X NCB31CK-473X NFV41CJ-104X NCB31CK-473X NDC31HJ-270X NCB31HK-103X NEH91HM-105X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31CK-473X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HJ-270X NCB31HK-103X NCB31EK-223X NCB31EK-223X NCB31EK-223X	CER.CAPACITOR FILM CAPACITOR CER.CAPACITOR	0.047 0.1 0.01 0.047 0.1 0.047 27p 27p 0.01 1 0.047 27p 27p 27p 0.01 1 0.047 0.047 0.047 0.047 0.047 0.047 0.047 0.047 0.047	16V 16V 25V 16V 16V 16V 50V 50V 50V 50V 50V 50V 50V 50V 50V 50	IC2 IC3 IC4 IC7 Q1 Q2 Q3 Q4 Q6 D1 R1 R2 R3 R4 R5 R6 R7 R8 R9 R13	TC74HC04AF-X AD8011AR-X OPA655U-XE AD603AR-X 2SA1226T2B 3SK157/4-6/-W 3SK157/4-6/-W 3SK157/4-6/-W 3SK157/4-6/-W HSM198S-W NRSA63D-322X NRSA63D-332X NRSA63J-100X	I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M) TRANSISTOR FET FET FET FET DIODE M.G.RESISTOR	TOSHIBA ANALOG DE BURR BROV ANALOG DE NEC NEC NEC NEC HITACHI 22 3.3k 1M 3.3k 10 10 10 10 10 220	VN
LC1 LC7 LC101 CN1 CN2 CN3 CN4 CN5 CN6	EXC-CET471U SCV1804-222Z NQR0122-001X QGA1201C2-06X QGA1201C2-09X QGF0508F1-30X QGF0508F1-30X QGF0508F1-30X QGA1201C2-11X	LC FILTER LC FILTER LC FILTER CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR	LC1-3 LC7-11 LC101-301 6PIN 9PIN 30PIN 30PIN 30PIN 11PIN		R14 R15 R16 R18 R19 R20 R21 R22 R24 R25	NRSA63D-224X NRSA63D-152X NRSA63D-152X NRSA63D-102X NRSA63D-181X NRSA63D-181X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-102X NRSA63D-822X NRSA63D-105X NRSA63D-105X NRSA63D-105X NRSA63D-220X	M.G.RESISTOR	220k 1.5k 390 1k 180 100 100 1.2k 8.2k 1k 1M 1M 22	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W
K13 K17 K19 K102 K104 K105 K107 K108 K201 K202 K204 K205 K207 K208 K301 K302 K305 K307 K308	NNZ0022-001X SCV2662-027 NQR0292-001X NQR0265-001X SCV2662-027 NGR0292-001X SCV2662-027 NRSA63J-0R0X NQR0265-001X SCV2662-027 NQR0292-001X SCV2662-027 NRSA63J-0R0X NQR0295-001X NQR0292-001X SCV2662-027 NRSA63J-0R0X NQR0292-001X SCV2662-027 NRSA63J-0R0X NQR0295-001X NQR0295-001X NQR0295-001X NQR0295-001X NQR0295-001X	FERRITE BEADS FERAITE BEAD FERRITE BEAD FERRITE BEADS FERRITE BEADS FERRITE BEADS M.G.RESISTOR FERAITE BEAD FERRITE BEAD FERRITE BEAD FERRITE BEAD FERRITE BEAD FERRITE BEAD FERRITE BEADS M.G.RESISTOR FERAITE BEAD FERRITE BEADS M.G.RESISTOR FERAITE BEAD	K13-16 K17,18,50,101 K19,49,51 K102,103 K104,201 K105,106 0 K108-116 K201,204 K202,203 K205,206 0 K208-216 K301,304 K302,303 K305,306 0 K308-316	(U) 1/16W (E) (U) 1/16W	R33 R34 R35 C1 C2 C3 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C19 C20	NRSA63D-220X NRSA63D-102X NRSA63D-101X NBE21AM-106X NBE21AM-106X NBE21EM-105X NBE21CM-225X NBE41VM-335X NCB31EK-103X NCB31EK-103X NCB31EK-103X NCB31EK-103X NCB31CM-225X NBE21CM-225X NDC31HJ-150X NDC31HJ-150X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X	M.G. RESISTOR M.G. RESISTOR M.G. RESISTOR M.G. RESISTOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR CER.CAPACITOR TAN.CAPACITOR CER.CAPACITOR TAN.CAPACITOR	1k 100 10 10 12.2 3.3 0.01 0.047 68p 2.2 2.2 15p 15p 2.2 2.2 2.2	1/16W 1/16W 1/16W 10V 25V 16V 35V 25V 25V 16V 16V 50V 16V 50V 16V 16V 16V 16V
TB1	PGZ02228	EARTH LUG	TB1,2		C22 C25 C26 C27 C28 LC1 CN3 K1	NDC31HJ-820X NDC31HJ-100X NCB31CK-473X NCB31CK-473X NDC31HJ-101X EXC-CET471U QGF0504C1-30X SCV2662-027 QNV0018-020	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR LC FILTER CONNECTOR FERRITE BEADS IC SOCKET	82p 10p 0.047 0.047 100p 30PIN K1,3,4 FOR IC1	50V 50V 16V 16V 50V

6.3 ISG BOARD ASSEMBLY PARTS LIST 03

SCK2523-02-00A 03

6.4 ISR BOARD ASSEMBLY PARTS LIST 04
SCK2523-03-00A 04

SCI	K2523-02-00A		03		K2523-03-00A		
Symbol No.	Part No.	Part Name	Description	Symbol No.	Part No.	Part Name	Description
IC2 IC3 IC4 IC7	TC74HC04AF-X AD8011AR-X OPA655U-XE AD603AR-X	I.C.(M) I.C.(M) I.C.(M)	TOSHIBA ANALOG DEVICES BURR BROWN ANALOG DEVICES	IC2 IC3 IC4 IC7	TC74HC04AF-X AD8011AR-X OPA655U-XE AD603AR-X	I.C.(M) I.C.(M) I.C.(M) I.C.(M)	TOSHIBA ANALOG DEVICES BURR BROWN ANALOG DEVICES
Q1 Q2 Q3 Q4 Q6	2SA1226T2B 3SK157/4-6/-W 3SK157/4-6/-W 3SK157/4-6/-W 3SK157/4-6/-W	TRANSISTOR FET FET FET FET	NEC NEC NEC NEC NEC	Q1 Q2 Q3 Q4 Q6	2SA1226T2B 3SK157/4-6/-W 3SK157/4-6/-W 3SK157/4-6/-W 3SK157/4-6/-W	TRANSISTOR FET FET FET FET	NEC NEC NEC NEC NEC
D1	HSM198S-W	DIODE	HITACHI	D1	HSM198S-W	DIODE	HITACHI
R1 R2 R3 R4 R5 R6 R7 R8 R9 R13	NRSA63D-220X NRSA63D-332X NRSA63J-105X NRSA63J-105X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63D-221X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	22 1/16W 3.3k 1/16W 1M 1/16W 3.3k 1/16W 10 1/16W 10 1/16W 10 1/16W 10 1/16W 10 1/16W 220 1/16W	R1 R2 R3 R4 R5 R6 R7 R8 R9 R13	NRSA63D-220X NRSA63D-332X NRSA63J-105X NRSA63J-105X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63J-100X NRSA63D-221X	M.G.RESISTOR	22 1/16W 3.3k 1/16W 1M 1/16W 3.3k 1/16W 10 1/16W 10 1/16W 10 1/16W 10 1/16W 10 1/16W 220 1/16W
R14 R15 R16 R18 R19 R20 R21 R22 R24 R25	NRSA63D-224X NRSA63D-152X NRSA63D-471X NRSA63D-102X NRSA63D-181X NRSA63D-181X NRSA63D-101X NRSA63D-101X NRSA63D-121X NRSA63D-122X NRSA63D-152X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	220k 1/16W 1.5k 1/16W 470 1/16W 1k 1/16W 180 1/16W 180 1/16W 100 1/16W 120 1/16W 1.2k 1/16W 1.5k 1/16W	R14 R15 R16 R18 R19 R20 R21 R22 R24 R25	NRSA63D-224X NRSA63D-152X NRSA63D-391X NRSA63D-102X NRSA63D-181X NRSA63D-181X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-122X NRSA63D-222X	M.G.RESISTOR	220k 1/16W 1.5k 1/16W 390 1/16W 1k 1/16W 180 1/16W 180 1/16W 100 1/16W 100 1/16W 1.2k 1/16W 2.2k 1/16W
R26 R27 R30 R33 R34 R35	NRSA63J-0R0X NRSA63J-105X NRSA63J-105X NRSA63D-220X NRSA63D-102X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	0 1/16W 1M 1/16W 1M 1/16W 22 1/16W 1k 1/16W 100 1/16W	R26 R27 R30 R33 R34 R35	NRSA63D-151X NRSA63J-105X NRSA63J-105X NRSA63D-220X NRSA63D-102X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	150 1/16W 1M 1/16W 1M 1/16W 22 1/16W 1k 1/16W 100 1/16W
C1 C2 C3 C6 C7 C8 C9 C10 C11 C12	NBE21AM-106X NBE21AM-106X NBE21EM-105X NBE21CM-225X NBE41VM-335X NCB31EK-103X NCB31EK-103X NCB31CK-473X NDC31HJ-680X NBE21CM-225X	TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR	10 10V 10 10V 1 25V 2.2 16V 3.3 35V 0.01 25V 0.01 25V 0.047 16V 68p 50V 2.2 16V	C1 C2 C3 C6 C7 C8 C9 C10 C11	NBE21AM-106X NBE21AM-106X NBE21EM-105X NBE21CM-225X NBE41VM-335X NCB31EK-103X NCB31EK-103X NCB31CK-473X NDC31HJ-680X NBE21CM-225X	TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR	10 10V 10 10V 1 25V 2.2 16V 3.3 35V 0.01 25V 0.01 25V 0.047 16V 68p 50V 2.2 16V
C13 C14 C15 C16 C17 C19 C20 C22 C26 C27	NBE21CM-225X NDC31HJ-150X NDC31HJ-150X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NDC31HJ-820X NCB31CK-473X NCB31CK-473X	TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	2.2 16V 15p 50V 15p 50V 2.2 16V 2.2 16V 2.2 16V 2.2 16V 2.2 16V 82p 50V 0.047 16V	C13 C14 C15 C16 C17 C19 C20 C22 C25 C26	NBE21CM-225X NDC31HJ-150X NDC31HJ-150X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NBE21CM-225X NDC31HJ-820X NDC31HJ-151X NCB31CK-473X	TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	2.2 16V 15p 50V 15p 50V 2.2 16V 2.2 16V 2.2 16V 2.2 16V 82p 50V 150p 50V 0.047 16V
C28	NDC31HJ-101X	CER.CAPACITOR	100p 50V	C27 C28	NCB31CK-473X NDC31HJ-101X	CER.CAPACITOR CER.CAPACITOR	0.047 16V 100p 50V
LC1	EXC-CET471U	LC FILTER	20DIN	LC1	EXC-CET471U	LC FILTER	
CN4 K1	QGF0503F4-30X	CONNECTOR	30PIN K1,3,4	CN5	QGF0504C1-30X	CONNECTOR	30PIN
SK1	SCV2662-027 QNV0018-020	FERRITE BEADS	FOR IC1	K1	SCV2662-027	FERRITE BEADS	K1,3,4
	21110010-020	I DOOKET	. 311101	SK1	QNV0018-020	IC SOCKET	FOR IC1

6.5 CP BOARD ASSEMBLY PARTS LIST 05

SCK2585-01-N0A(U)

3CK2303-01-140A(0)	
SCK2526-01-P1A(E)	05

Symbol No. Part No. Part Name Descrip		Description	
IC1 IC2	MB90T678BPF TC74VHC373FT-X	I.C.(M) I.C.(M)	FUJITSU TOSHIBA
SK3	SCV2768-001X	IC SOCKET	FOR IC3
IC3	PLSC1238 PLSC1256	i.C.(M) i.C.(M)	M28F512-12C1 (E) M28F512-12C1 (U)
SK4	SCV2768-001X	IC SOCKET	FOR IC4
IC4 IC5 IC6 IC7 IC8 IC9 IC10 IC11 IC12 IC13	PLSC1234 P16V8Z-25-01 CY62256LL70SN-X UPD71055GB-10 UPD6453GT-101 NM93C86AEM8-X TA75S01F-X M62353GP-X MN12821-QR-X MC74HC367F-X	L.C.(M) L.C.(M) L.C.(M) L.C.(M) L.C.(M) L.C.(M) L.C.(M) L.C.(M) L.C.(M) L.C.(M)	MBM29F002T-70PD ADVANCED MICRO CYPRESS NEC NEC NATIONAL SEMICO TOSHIBA MITSUBISHI MATSUSHITA MOTOROLA
IC14 IC15 IC16 IC17 IC18 IC19 IC20 IC21 IC22 IC23	TC7W00FU-X TC4053BFT-X NJM2068M-D-X NJM2068M-D-X TC4W53FU-X TC4W53FU-X TC7SH04FU-X NJM4556AM-X TC7W08FU-X	I.C.(M)	TOSHIBA TOSHIBA JRC JRC TOSHIBA TOSHIBA TOSHIBA JRC TOSHIBA TOSHIBA TOSHIBA
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10	DTC124EUA-X DTA124EUA-X DTA124EUA-X DTA124EUA-X 2SD2240/RST/-X DTC124EUA-X DTC124EUA-X DTC124EUA-X DTC124EUA-X 2SK662/QR/-X	TRANSISTOR	ROHM ROHM ROHM ROHM MATSUSHITA ROHM ROHM ROHM ROHM ROHM ROHM MATSUSHITA
Q11 Q12 Q13 Q14	2SD601A/QRS/-X 2SD601A/QRS/-X 2SB1463/RST/-X 2SD2240/RST/-X	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA MATSUSHITA (U) MATSUSHITA (U)
D2 D3 D4 D5 D6 D7 D8 D9 D11 D12	MA143A-X MA143A-X MA142A-X MA142A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X	DIODE DIODE DIODE DIODE DIODE DIODE DIODE DIODE DIODE DIODE DIODE DIODE	MATSUSHITA
D13 D200	MA142A-X MA142A-X	DIODE DIODE	MATSUSHITA MATSUSHITA
LD1	GL3HS44	L.E.D.	SHARP
R1 R2 R3 R4 R5 R6	NRSA63D-105X NRSA63D-102X NRSA63D-105X NRSA63D-274X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	1M 1/16W 1k 1/16W 1M 1/16W (U) 270k 1/16W (U) 22k 1/16W 22k 1/16W 22k 1/16W

Symbol	Part No.	Part Name	Description		
No.	rait NO.	rait Haille	56		
R8 R10 R11 R12 R13 R15	NRSA63D-104X NRSA63D-223X NRSA63D-274X NRSA63D-473X NRSA63D-223X NRSA63D-622X NRSA63D-622X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	100k 22k 270k 47k 22k 6.2k	1/16W 1/16W (U) 1/16W (U) 1/16W 1/16W 1/16W	
R17 R18 R19	NRSA63D-223X NRSA63D-332X NRSA63J-0R0X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	22k 3.3k 0	1/16W 1/16W 1/16W	
R20 R21 R22 R23 R24 R25 R26 R27 R28 R29	NRSA63D-101X NRSA63D-101X NRSA63D-103X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	100 100 10k 100 100 680 100 100 100	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W	
R30 R31 R32 R33 R34 R35 R36 R37 R38 R39	NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	100 100 100 100 47k 100 100 100 100	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W	
R40 R41 R42 R43 R44 R45 R46 R47 R48 R49	NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-392X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	100 100 100 100 100 100 100 100 3.9k 100	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W	
R50 R51 R52 R53 R54 R55 R56 R57 R58	NRSA63D-392X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-124X NRSA63D-334X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	3.9k 100 100 100 100 100 100 120k 330k 10k	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W	
R60 R61 R62 R63 R64 R65 R66 R67 R68 R69	NRSA63D-104X NRSA63D-223X NRSA63D-562X NRSA63D-103X NRSA63D-183X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63D-223X NRSA63D-223X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	100k 22k 5.6k 10k 18k 0 0 22k 22k 22k	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W	
R70 R71 R72 R73 R74 R75 R76 R77 R78	NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	22k 22k 22k 22k 22k 22k 22k 22k 22k 22k	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W	
R80 R81 R82	NRSA63D-223X NRSA63D-223X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	22k 22k 22k	1/16W 1/16W 1/16W	

Symbol No.	Part No.	Part No. Part Name		Description		
R83 R84 R85 R86 R87 R88 R89 R90 R91 R92	NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-473X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	22k 22k 22k 22k 22k 22k 22k 22k 22k 22k	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W		
R93 R94 R95 R96 R97 R98 R99 R100 R101 R102	NRSA63D-473X NRSA63D-471X NRSA63D-473X NRSA63D-473X NRSA63D-473X NRSA63D-473X NRSA63D-473X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	47k 470 47k 47k 47k 47k 47k 10k 10k	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W		
R103 R104 R105 R106 R107 R108 R109 R110 R111	NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA02J-682X NRSA02J-682X NRSA02J-682X NRSA02J-682X NRSA02J-682X NRSA02J-682X NRSA02J-682X	M.G.RESISTOR	100 100 100 100 100 6.8k 6.8k 6.8k 6.8k 6.8k	1/16W 1/16W 1/16W 1/16W 1/16W 1/10W 1/10W 1/10W 1/10W 1/10W		
R113 R114 R115 R116 R117 R118 R119 R120 R121 R122	NRSA02J-682X NRSA02J-682X NRSA02J-682X NRSA63D-273X NRSA63D-104X NRSA63D-202X NRSA63D-473X NRSA63D-153X NRSA63D-080X NRSA63D-104X	M.G.RESISTOR	6.8k 6.8k 6.8k 27k 100k 2k 47k 15k 0	1/10W 1/10W 1/10W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W (E)		
R123 R124 R125 R126 R127 R128 R129 R130 R131	NRSA63D-473X NRSA63D-473X NRSA63D-223X NRSA63D-103X NRSA63D-103X NRSA63D-222X NRSA63D-104X NRSA63D-104X NRSA63D-103X NRSA63D-103X NRSA63D-392X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	47k 47k 22k 10k 10k 2.2k 100k 100k 10k 3.9k	1/16W 1/16W (E) 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W		
R133 R134 R135 R136 R137 R138 R139 R140 R141 R142	NRSA63D-105X NRSA63D-104X NRSA63D-222X NRSA63D-333X NRSA63D-124X NRSA63D-124X NRSA63D-270X NRSA63D-270X NRSA63D-122X NRSA63D-122X NRSA63D-122X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	1M 100k 2.2k 33k 120k 120k 27 27 1.2k 1.2k	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W		
R143 R144 R145 R146 R147 R148 R149 R150 R151 R152	NRSA63D-270X NRSA63D-270X NRSA63D-103X NRSA63D-103X NRSA63D-220X NRSA63D-220X NRSA63D-220X NRSA63D-220X NRSA63D-220X NRSA63D-220X NRSA63D-220X NRSA63D-220X	M.G.RESISTOR	27 27 10k 10k 22 22 22 22 22 22 22	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W		
R153 R154 R155	NRSA63D-153X NRSA63D-472X NRSA63D-750X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	15k 4.7k 75	1/16W 1/16W 1/16W		

Symbol No.	Part No.	Part Name	Description
R156 R157 R158 R159 R160 R161 R162 R163 R164 R165	NRSA63D-680X NRSA63D-202X NRSA63D-472X NRSA63D-153X NRSA63D-153X NRSA63D-104X NRSA63D-101X NRSA63D-104X NRSA63D-104X NRSA63D-104X NRSA63D-104X NRSA63D-473X	M.G.RESISTOR	68 1/16W 2k 1/16W 4.7k 1/16W 15k 1/16W 15k 1/16W 100k 1/16W 100 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W
R166 R167 R170 R171	NRSA63D-473X NRSA63D-473X NRSA63D-560X NRSA63D-560X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	47k 1/16W (E) 47k 1/16W 56 1/16W 56 1/16W
VR1 VR2 VR3 VR4 VR5 VR6	QVPB609-203Z QVPB609-203Z QVQ0162-A14 QVQ0162-A14 QVQ0162-A14 QVQ0162-A14	TRIM.RESISTOR TRIM.RESISTOR VAL.RESISTOR VAL.RESISTOR VAL.RESISTOR VAL.RESISTOR	20k H PHASE 20k SC FINE 10k MIC R LEV.L 10k MIC R LEV.R 10k MONITOR 10k ALARM
C1 C2 C3 C4 C6 C7 C8 C9 C10	NCB10JM-335X NEH90JM-107X NCB10JM-335X NEH91CM-476X NEH90JM-107X NCB10JM-3476X NCB10JM-335X NCB10JM-335X NCB10JM-335X NCB10JM-335X	CER.CAPACITOR E.CAPACITOR CER.CAPACITOR E.CAPACITOR E.CAPACITOR E.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	3.3 6.3V 100 6.3V 3.3 6.3V 47 16V 100 6.3V 47 16V 3.3 6.3V 3.3 6.3V 3.3 6.3V 0.047 16V 3.3 6.3V
C12 C13 C14 C15 C16 C17 C18 C19 C20 C21	NCB31CK-473X NCB10JM-335X NCB31CK-473X NCB10JM-335X NCB31CK-473X NCB10JM-335X NCB31CK-473X NCB10JM-335X NCB31CK-473X NCB31CK-473X NCB10JM-335X	CER.CAPACITOR	0.047 16V 3.3 6.3V 0.047 16V 3.3 6.3V 0.047 16V 3.3 6.3V 0.047 16V 3.3 6.3V 0.047 16V 3.3 6.3V 0.047 16V 3.3 6.3V
C22 C23 C24 C25 C26 C27 C28 C29 C30 C31	NDC31HJ-331X NCB10JM-335X NDC31HJ-101X NCB31CK-473X NCB31CK-473X NEH91HM-335X NEH91HM-335X NEH91HM-335X NCB31CK-333X NCB31CK-333X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR E.CAPACITOR E.CAPACITOR E.CAPACITOR E.CAPACITOR CER.CAPACITOR CER.CAPACITOR	330p 50V 3.3 6.3V 100p 50V 0.047 16V 0.047 16V 3.3 50V 3.3 50V 3.3 50V 0.033 16V 0.033 16V
C32 C33 C34 C35 C36 C37 C38 C39 C40 C41	NCB10JM-335X NCB10JM-335X NDC21HJ-152X NEH91AM-336X NBE21CM-105X NDC31HJ-101X NCB11CK-105X NEH91AM-336X NCB10JM-335X NDC31HJ-331X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR E.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR E.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	3.3 6.3V 3.3 6.3V 1500p 50V 33 10V 1 16V 100p 50V 1 16V 33 10V 3.3 6.3V 330p 50V
C42 C43 C44 C45 C46 C47 C48 C49 C50 C51	NDC31HJ-101X NDC31HJ-101X NCB31CK-473X NCB31CK-473X NCB31CK-473X NEH90JM-107X NBE21AM-106X NCB10JM-335X NDC31HJ-221X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR E.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	100p 50V 100p 50V 0.047 16V 0.047 16V 100 6.3V 10 10V 3.3 6.3V 220p 50V 0.047 16V

6.6 MAIN BOARD ASSEMBLY PARTS LIST 0 6 SCK2534-U0A(U)

SCK2534-U0A(U)	
SCK2534-E1A(E)	06

ymbol No.	Part No. Part Name		Description		Part Name Description	tion
C55 C60 L1 L2 L3 L4	NDC21HJ-152X NCB31CK-473X NQL054K-101X NQL054K-101X NQL114K-100X NQL114K-100X	CER.CAPACITOR CER.CAPACITOR COIL COIL COIL COIL	1500p 0.047 100uH 100uH 10uH 10uH	50V 16V		
X1	NAX0061-001X	CRYSTAL	4MHz			
\$1 \$2 \$3 \$4 \$5 \$6 \$7 \$8 \$9 \$10	SCV2595-008W QSW0233-001 NSW0070-002X NSW0070-002X NSW0070-002X NSW0070-001X NSW0010-001X NSW0010-001X NSW0010-001X NSW0010-001X	DIP SWITCH ROTARY SWICH SLIDE SWITCH SLIDE SWITCH SLIDE SWITCH SLIDE SWITCH SWITCH SWITCH SWITCH SWITCH SWITCH SWITCH	SC COARSE SHUTTER IRIS BLACK FILE FULL AUTO LOLUX DOWN UP			
S11 S12 S13 S14	NSW0010-001X NSW0010-001X NSW0010-001X NSW0018-001X	SWITCH SWITCH SWITCH SLIDE SWITCH	ITEM SET MENU RS-232C/VTR			
CN1 CN6 CN8 CN16 CN21 CN26 CN27 CN28 CN29 CN30	QGA1201F2-04X QGA1201F2-11X QGA1201F2-12X QGA1201F2-15X QGA1201F2-10X QGA1201F2-07X QGA1201F2-04X QGA1201F2-04X QGA1201F2-02X QGA1201F2-02X QGF1012F1-10X	CONNECTOR	4PIN 11PIN 12PIN 15PIN 10PIN 7PIN 4PIN 3PIN 2PIN 10PIN			
CN31 CN32 CN50	QGA1201F2-09X QGF1012F1-24X QGA1201F2-06X	CONNECTOR CONNECTOR CONNECTOR	9PIN 24PIN 6PIN	(U)		
TP1	NNZ0009-001X	TEST POINT	TP1-24			
K1 K8 K12 K13	SCV2662-027 NQR0265-001X NRSA63D-392X NQR0292-001X	FERRITE BEADS FERAITE BEAD M.G.RESISTOR FERAITE BEAD	K1-7 K8-11,19-24 R200 K13-18	(U)		
TB1	PGZ02228	EARTH LUG	TB1-3			
SP1	SC43656-015	LED SPACER	FOR LD1			
PW1	SCK2571-01-N2A	AUDIO-SUB BOARD ASSEMBLY		(U)		
CN101	QGA1201F2-06X	CONNECTOR	6PIN	(U)		
		mbly SCK2585-01-N0A AUDIO-SUB board ass 3 and after				
			1			

SCK2534-E1A(E) 0 6 0 6			
Symbol No.	Part No.	Part Name	Description
IC1 IC101 IC102 IC103 IC104 IC105 IC106 IC107 IC108 IC109	NJM2903V-X PLSC1236 SN74LV244APW-X SN74CBT3253PW-X SN74CBT3345PW-X SN74CBT3345PW-X TC74VHC174FF-X TC74VHC174FF-X TC7W126FU-X DS26C32ATM-X	I.C.(M)	JRC UPD78P58YGC-3B9 TEXAS TEXAS TEXAS TEXAS TOSHIBA TOSHIBA TOSHIBA NATIONAL SEMICO
IC110 IC111 IC112 IC201 IC202 IC203 IC204 IC205 IC206 IC207	BU4094BCFV-X UPC4082G2-X S-81240SGUP-X JCL0029 DS90LV031TM-X TC74VHCT541AFTX TC7566FU-X S-81240SGUP-X JCL0030 HM538254BTT-7	I.C.(M)	ROHM NEC SEIKO JVC NATIONAL SEMICO TOSHIBA TOSHIBA SEIKO JVC HITACHI
IC208 IC209 IC210 IC211 IC212 IC213 IC214 IC215 IC216 IC217	SN74CBT3345PW-X SN74CBT3345PW-X TC74VHCT541AFTX TC74VHCT541AFTX SN74CBT3345PW-X SN74CBT3345PW-X HM538254BTT-7 DS90LV032TM-X L7A1433 L7A1433		TEXAS TEXAS TOSHIBA TOSHIBA TEXAS TEXAS HITACHI NATIONAL SEMICO LSI LOGIC LSI LOGIC
IC218 IC219 IC220 IC221 IC222 IC223 IC224 IC225 IC226 IC227	MN673711 MN673711 UPD42S4260ALG5 UPD42S4260ALG5 S-81224SGUP-X S-81224SGUP-X JCL0028 UPD489001 UPD489001 UPD489001	I.C.(M)	MATSUSHITA MATSUSHITA NEC NEC SEIKO SEIKO JVC NEC NEC NEC
IC228 IC229 IC230 IC231 IC300 IC301 IC302 IC303 IC304 IC305	UPD489001 SN74LV125APW-X TC74VHC541FT-X EPM032VT-15-002 AD8011AR-X LMC6082IM-X TDA8766G/C1 AD8011AR-X TDA8766G/C1 AD8011AR-X	I.C.(M)	NEC TEXAS TOSHIBA ALTER ANALOG DEVICES NATIONAL SEMICO PHILIPS ANALOG DEVICES PHILIPS ANALOG DEVICES
IC306 IC307 IC308 IC309 IC310 IC311 IC312 IC313 IC314 IC315	LMC6082IM-X TDA8766G/C1 TC74VHC541FT-X EPF10K20TC144-3 EPF10K10TC144-4 JCS0048 MN657021F TC4W53FU-X TC4W53FU-X S-81233SGUP-X	I.C.(M)	NATIONAL SEMICO PHILIPS TOSHIBA ALTER ALTER JVC MATSUSHITA TOSHIBA TOSHIBA SEIKO
IC316 IC400 IC401 IC402 IC403 IC404 IC405 IC406 IC407 IC408	S-81233SGUP-X OPA658U-XE AD817AR-X AD817AR-X OPA658U-XE TC7508FU-X NJM1496V-X OPA658U-XE TC7SU04FU-X NJM1496V-X	I.C.(M)	SEIKO BURR BROWN ANALOG DEVICES ANALOG DEVICES BURR BROWN TOSHIBA JRC BURR BROWN TOSHIBA (E) JRC
IC409 IC410 IC411	AD8011AR-X AD8011AR-X AD8011AR-X	I.C.(M) I.C.(M) I.C.(M)	ANALOG DEVICES ANALOG DEVICES ANALOG DEVICES

DATE	Symbol No.	Part No.	Part Name	Description	Symbol No.	Part No.	Part Name	Descrip	tion
CAMPS CAMP		SNIZAL VORA PWAY	LC (M)	TEXAS	0419	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
AMALGO DEVICES CAPT MSCR890B/MS TRANSISTOR MOTOROLA MSCR890B/MS TRANSISTOR MSCR890B/MS									
CAST COPY									
CASE									
CAMPS CAMP									
Learner									
C419 ADBILITARY C.D.M									
ABBOTTARN C. I.M. ANALOG DEVICES 0.427 25.4153292CVX TRANSISTOR MATSUSHITA	IC418	LM1881M-X	I.C.(M)	NATIONAL SEMICO					
TOSHIBA GAZE TOSHIBA GAZE TOSHIBA GAZE TOSHIBA GAZE GA						MSC3930/B/-X			
CAMPS CAMP	IC419	AD8011AR-X	I.C.(M)	ANALOG DEVICES	Q427	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
				TOSHIBA					
LCAM					Q428	DTC124EUA-X	TRANSISTOR	ROHM	
TC74HC45S94F5X C.C.M.									
ABSTARE C.M. ABST									
CZ48 CZ5027					D1	MA143A-X	DIODE	MATSUSHITA	
CAMP									
M88931 PPUX L.C.I.MI									
C429 UPC2884GA LC.IM NEC									
CA29									
Decasing	IC428	TC/4VHC15/FI-X	I.C.(M)	IOSHIBA					
TC7249HCS31FTX				1					
TOADSBETX									
CA32 TC75HBBPLX LC,MM	IC430	TC74VHC541FT-X	I.C.(M)	TOSHIBA					
C423 TC75HB6PLX LC,MM	IC431	TC4053BFT-X							
CG33				TOSHIBA	D405	MA335-X	DIODE	MATSUSHITA	
CASH CAMPACAGGAPA C.C.M. MOTOROLLA C.M. MOTOROLLA C.M. MOTOROLLA C.M. MOTOROLLA C.M. MOTOROLLA C.M. MATONALA SEMICO SEIKO TOSHIBA TO									
Ca36			(,		D406	MA335-X	DIODE	MATSUSHITA	
MCG0082IMAX								MATSUSHITA	
Cada Grospell									
TC7508FUX					1				
C700 MeSa01PF LC.I.M MITSUBISH R3 NRSA83D-323X M. G.RESISTOR 47k 176W 47k					R1	NRSA63D-103Y	M.G. RESISTOR	10k	1/16W
C701 M68401FP	10440	10/300FU-X	1.0.((VI)	TOSTIBA					
C720 MS2680FP LC.IM	10700	140540450	1.040	MITCHIDICHI					
C720 M65401FP I.C. M)									
C709									
Syntaming Synt		M65401FP							
C706	IC703	AK4323VF-X	I.C.(M)						
ASSAHIKASE R9	IC704	SN74LV125APW-X	I.C.(M)	TEXAS					
C709 C704VICT61AFTX LC, IM	IC705	SN74LV125APW-X	I.C.(M)						
C770 TC74H/CT641AFTX L.C.IM MTSUBISH R10 NRSA63D-392X M.G.RESISTOR 3.9k 1/16W				ASAHI KASEI					
C709 M5278D05 LC.(M) TOSHIBA R11 NRSA63D-392X M.G.RESISTOR 3.9k 1/16W				TOSHIBA	R10	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16W
TCAS90F-W LC.(M)									
C710					R11	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16W
C710	.0,00								1/16W
C712	IC710	S-81224SGLIP-X	LC.(M)	SEIKO					
C712									
Color									
Color	10/12	CIVIT / 100/G/-XE	1.0.(141)	DO/III DILOVVIA					
Q1									
Q2 DTC144WUA-X TRANSISTOR ROHM R19 MSSA63D-101X M.G.RESISTOR 100 1/16W Q3 25D1820/QGF/X TRANSISTOR MATSUSHITA R20 NRSA63D-101X M.G.RESISTOR 100 1/16W Q6 DTC14EUA-X TRANSISTOR MATSUSHITA R21 NRSA63D-101X M.G.RESISTOR 100 1/16W Q6 DTC14EUA-X TRANSISTOR MATSUSHITA R21 NRSA63D-101X M.G.RESISTOR 100 1/16W Q101 XN4509-W TRANSISTOR MATSUSHITA R23 NRSA63D-101X M.G.RESISTOR 100 1/16W Q300 MSC3930/B/X TRANSISTOR MOTOROLA R25 NRSA63D-101X M.G.RESISTOR 100 1/16W Q301 MSC3930/B/X TRANSISTOR MOTOROLA R26 NRSA63D-101X M.G.RESISTOR 100 1/16W Q303 MSC3930/B/X TRANSISTOR MOTOROLA R26 NRSA63D-101X M.G.RESISTOR 100 1/16W Q304 ZSA1532/BC/X <td>04</td> <td>2CB1210/0D/V</td> <td>TRANSISTOR</td> <td>MATCHICHITA</td> <td></td> <td></td> <td></td> <td></td> <td></td>	04	2CB1210/0D/V	TRANSISTOR	MATCHICHITA					
S2D1820/QR/X TRANSISTOR MATSUSHITA R20 NRSA63D-101X M.G.RESISTOR 100 1/16W									
DTA124EUA-X TRANSISTOR ROHM ROHM ROTO124EUA-X TRANSISTOR MATSUSHITA ROTO124EUA-X TRANSISTOR MATSUSHITA ROTO124EUA-X TRANSISTOR MATSUSHITA ROTO124EUA-X TRANSISTOR MATSUSHITA ROTO124EUA-X TRANSISTOR MOTOROLA ROTO124EUA-X TRANSISTOR ROHM ROT0124EUA-X ROT0124EUA-X ROT0124EUA-X ROT0124EUA-									
05 25B121g/QR/X TRANSISTOR MATSUSHITA R21 NRSA63D-101X M.G.RESISTOR 100 1/16W 0101 XNA509-W TRANSISTOR MATSUSHITA R22 NRSA63D-101X M.G.RESISTOR 100 1/16W 0101 XNA509-W TRANSISTOR MATSUSHITA R24 NRSA63D-101X M.G.RESISTOR 100 1/16W 0300 MSC3930/B-X TRANSISTOR MOTOROLA R25 NRSA63D-101X M.G.RESISTOR 100 1/16W 0301 MSC3930/B-X TRANSISTOR MOTOROLA R26 NRSA63D-101X M.G.RESISTOR 100 1/16W 0302 MSC3930/B-X TRANSISTOR MOTOROLA R28 NRSA63D-101X M.G.RESISTOR 100 1/16W 0303 2SA1532/BC/X TRANSISTOR MATSUSHITA R29 NRSA63D-101X M.G.RESISTOR 100 1/16W 0304 2SA1632/BC/X TRANSISTOR MATSUSHITA R29 NRSA63D-101X M.G.RESISTOR 100 1/16W 0401 2SA1					H20	MU2HO3D-101X	IVI.G.DESISTOR	100	1/1044
DTC124EUAX					5	NIDOLOGO 101V	M O DECICTOR	100	1/16\4/
Color Colo									
Color Colo									
O300	Q101	XN4509-W						1	
O301			TRANSISTOR						
Q301 MSC3930/B/-X TRANSISTOR MOTOROLA R26 NRSA63D-101X M.G.RESISTOR 100 1/16W R27 NRSA63D-101X M.G.RESISTOR 100 1/16W R28 NRSA63D-101X M.G.RESISTOR 100 1/16W NRSA63D-101X N.G.RESISTOR 100 1/16W NRSA63D-101X N.G.RESISTOR 100 1/16W NRSA63D-101X N.G.RESISTOR 100 1/16W NRSA63D-101X M.G.RESISTOR 1/16W NRSA63D-101X	Q300	MSC3930/B/-X	TRANSISTOR						
Color				MOTOROLA	R26	NRSA63D-101X			
Q302 MSC3930/B/-X TRANSISTOR MOTOROLA R28 NRSA63D-101X M.G.RESISTOR 100 1/16W Q304 2SA1532/BC/-X TRANSISTOR MATSUSHITA R29 NRSA63D-101X M.G.RESISTOR 100 1/16W Q305 2SA1532/BC/-X TRANSISTOR MATSUSHITA R30 NRSA63D-101X M.G.RESISTOR 100 1/16W Q401 2SK1632/BC/-X TRANSISTOR MATSUSHITA R31 NRSA63D-101X M.G.RESISTOR 100 1/16W Q402 2SA1532/BC/-X TRANSISTOR MATSUSHITA R31 NRSA63D-101X M.G.RESISTOR 100 1/16W Q403 MSC3930/B/-X TRANSISTOR MOTOROLA R32 NRSA63D-101X M.G.RESISTOR 0 1/16W Q404 MSC3930/B/-X TRANSISTOR MOTOROLA R33 NRSA63D-101X M.G.RESISTOR 0 1/16W Q405 DTC124EUA-X TRANSISTOR R0HM R35 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q408 <							M.G.RESISTOR	100	
Carrier	Q302	MSC3930/B/-X	TRANSISTOR	MOTOROLA					1/16W
O304 25A1532/BC/X TRANSISTOR MATSUSHITA R30 NRSA63D-101X M.G.RESISTOR 100 1/16W									1/16W
O305 2SA1532/BC/-X TRANSISTOR MATSUSHITA R31 NRSA63D-101X M.G.RESISTOR 100 1/16W								1	
Q401 2SK663/QR/X Q402 FET MATSUSHITA MATSUSHITA R31 NRSA63D-101X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-100X NRSA63J-100X M.G.RESISTOR M					1150	THOMOD-TOTA		1.50	.,
Q402 2SA1532/BC/X TRANSISTOR MATSUSHITA R32 NRSA63J-0R0X M.G.RESISTOR 0 1/16W Q403 MSC3930/B/X TRANSISTOR MOTOROLA R33 NRSA63J-100X M.G.RESISTOR 10 1/16W Q404 MSC3930/B/X TRANSISTOR MOTOROLA R34 NRSA63J-561X M.G.RESISTOR 560 1/16W Q405 DTC124EUA-X TRANSISTOR ROHM R35 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q406 DTC124EUA-X TRANSISTOR ROHM R36 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q408 3SK157/4-6/-W FET NEC R38 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q410 MSC3930/B/-X FET MATSUSHITA R39 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q411 MSC3930/B/-X TRANSISTOR MOTOROLA R40 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q416 DTC124EUA-X					B21	NRSA63D-101Y	M G RESISTOR	100	1/16W
Q403 MSC3930/B/-X TRANSISTOR MOTOROLA R33 NRSA63J-100X M.G.RESISTOR 10 1/16W Q404 MSC3930/B/-X TRANSISTOR MOTOROLA R34 NRSA63J-100X M.G.RESISTOR 560 1/16W Q405 DTC124EUA-X TRANSISTOR ROHM R35 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q406 DTC124EUA-X TRANSISTOR ROHM R36 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q408 3SK157/4-6/-W FET NEC R38 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q409 2SK663/QR/-X FET MATSUSHITA R39 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q411 MSC3930/B/-X TRANSISTOR MOTOROLA R40 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q412 MSC3930/B/-X TRANSISTOR MOTOROLA R41 NRSA63D-221X M.G.RESISTOR 0 1/16W Q414 DTA124EUA-X									
Q404 MSC3930/B/-X TRANSISTOR MOTOROLA R34 NRSA63D-561X M.G.RESISTOR 560 1/16W Q405 DTC124EUA-X TRANSISTOR ROHM R35 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q406 DTC124EUA-X TRANSISTOR ROHM R36 NRSA63D-222X M.G.RESISTOR 220 1/16W Q408 3SK157/4-6/-W FET NEC R38 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q409 2SK663/QR/-X FET MATSUSHITA R39 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q410 MSC3930/B/-X TRANSISTOR MOTOROLA R40 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q411 MSC3930/B/-X TRANSISTOR MOTOROLA R41 NRSA63D-221X M.G.RESISTOR 2.0 1/16W Q412 MSC3930/B/-X TRANSISTOR MOTOROLA R41 NRSA63D-108X M.G.RESISTOR 0 1/16W Q414 DTA124EUA-X								-	
Q405 DTC124EUA-X TRANSISTOR ROHM R35 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q406 DTC124EUA-X TRANSISTOR ROHM R36 NRSA63D-221X M.G.RESISTOR 220 1/16W Q408 3SK157/4-6/-W FET NEC R38 NRSA63D-221X M.G.RESISTOR 220 1/16W Q409 2SK663/QR/-X FET MATSUSHITA R39 NRSA63D-221X M.G.RESISTOR 220 1/16W Q410 MSC3930/B/-X TRANSISTOR MOTOROLA R40 NRSA63D-221X M.G.RESISTOR 220 1/16W Q412 MSC3930/B/-X TRANSISTOR MOTOROLA R40 NRSA63D-221X M.G.RESISTOR 220 1/16W Q412 MSC3930/B/-X TRANSISTOR MOTOROLA R41 NRSA63D-00X M.G.RESISTOR 0 1/16W Q413 2SJ364/QR/-X FET MATSUSHITA R43 NRSA63D-00X M.G.RESISTOR 1M 1/16W Q416 DTA124EUA-X TRANSIS									
Q406 DTC124EUA-X TRANSISTOR ROHM R36 NRSA63D-221X R37 M.G.RESISTOR NRSA63D-222X M.G.RESISTOR 220 1/16W Q408 3SK157/4-6/-W 2SK663/QR/-X Q410 FET MATSUSHITA NEC MATSUSHITA R38 R39 NRSA63D-221X NRSA63D-221X R39 M.G.RESISTOR NRSA63D-222X M.G.RESISTOR NRSA63D-221X 220 M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR 2.2k M.G.RESISTOR M.G.RESISTOR 1/16W Q410 MSC3930/B/-X MSC3930/B/-X D412 TRANSISTOR TRANSISTOR TRANSISTOR MOTOROLA MOTOROLA MATSUSHITA R41 R43 R101 NRSA63D-221X NRSA63D-221X NRSA63D-105X NRSA63D-105X NRSA63D-105X NRSA63D-105X NRSA63D-105X NRSA63D-105X M.G.RESISTOR M.									
Q408 3SK157/4-6/-W Q409 FET NEC R37 NRSA63D-222X M.G.RESISTOR Q20 1/16W M.G.RESIS									
Q408 3SK157/4-6/-W FET NEC R37 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q409 2SK663/QR/-X FET NEC R38 NRSA63D-221X M.G.RESISTOR 220 1/16W Q410 MSC3930/B/-X TRANSISTOR MOTOROLA R40 NRSA63D-221X M.G.RESISTOR 2.2k 1/16W Q412 MSC3930/B/-X TRANSISTOR MATSUSHITA R41 NRSA63D-221X M.G.RESISTOR 220 1/16W Q413 2SJ364/QR/-X TRANSISTOR MOTOROLA R41 NRSA63J-0ROX M.G.RESISTOR 0 1/16W Q414 DTA124EUA-X TRANSISTOR ROHM (U) R101 NRSA63D-102X M.G.RESISTOR 1k 1/16W Q416 MSC3930/B/-X TRANSISTOR MATSUSHITA R102 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416 MSC3930/B/-X TRANSISTOR MOTOROLA R102 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416	Q406	DTC124EUA-X	TRANSISTOR	ROHM	R36				
Q409 ZSK663/QR/-X FET MATSUSHITA R39 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q410 MSC3930/B/-X TRANSISTOR MOTOROLA R40 NRSA63D-221X M.G.RESISTOR 220 1/16W Q411 ZSA1532/BC/-X TRANSISTOR MATSUSHITA R41 NRSA63D-221X M.G.RESISTOR 0 1/16W Q412 MSC3930/B/-X TRANSISTOR MOTOROLA R41 NRSA63J-0R0X M.G.RESISTOR 0 1/16W Q414 DTA124EUA-X FET MATSUSHITA R43 NRSA63J-105X M.G.RESISTOR 1M 1/16W Q415 2SA1532/BC/-X TRANSISTOR ROHM (U) R101 NRSA63D-102X M.G.RESISTOR 1k 1/16W Q416 MSC3930/B/-X TRANSISTOR MATSUSHITA R102 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q417 2SA1532/BC/-X TRANSISTOR MOTOROLA R103 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416					R37	NRSA63D-222X	M.G.RESISTOR	2.2k	
OA09	Q408	3SK157/4-6/-W	FET	NEC I					
Q410 MSC3930/B/-X TRANSISTOR MOTOROLA R40 NRSA63D-221X M.G.RESISTOR 220 1/16W Q411 2SA1532/BC/-X TRANSISTOR MATSUSHITA R41 NRSA63D-221X M.G.RESISTOR 0 1/16W Q412 MSC3930/B/-X TRANSISTOR MOTOROLA R41 NRSA63J-0R0X M.G.RESISTOR 0 1/16W Q413 2SJ364/QR/-X FET MATSUSHITA R43 NRSA63J-105X M.G.RESISTOR 1M 1/16W Q414 DTA124EUA-X TRANSISTOR ROHM (U) R101 NRSA63D-102X M.G.RESISTOR 1k 1/16W Q415 2SA1532/BC/-X TRANSISTOR MATSUSHITA R102 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416 MSC3930/B/-X TRANSISTOR MOTOROLA R102 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416 MSC3930/B/-X TRANSISTOR MOTOROLA R103 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416<									
Q411 ZSA1532/BC/-X TRANSISTOR MATSUSHITA Q412 MSC3930/B/-X TRANSISTOR MOTOROLA R41 NRSA63J-0R0X M.G.RESISTOR 0 1/16W Q413 2SJ364/QR/-X FET MATSUSHITA R43 NRSA63J-105X M.G.RESISTOR 1M 1/16W Q414 DTA124EUA-X TRANSISTOR ROHM (U) R101 NRSA63D-102X M.G.RESISTOR 1k 1/16W Q415 2SA1532/BC/-X TRANSISTOR MATSUSHITA R102 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416 MSC3930/B/-X TRANSISTOR MOTOROLA R103 NRSA63D-222X M.G.RESISTOR 470 1/16W Q417 2SA1532/BC/-X TRANSISTOR MATSUSHITA R104 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W NRSA63D-822X M.G.RESISTOR 8.2k 1/16W									
Q412 MSC3930/B/-X TRANSISTOR MOTOROLA R41 NRSA63J-0R0X M.G.RESISTOR 0 1/16W Q413 2SJ364/QR/-X FET MATSUSHITA R43 NRSA63J-105X M.G.RESISTOR 1M 1/16W Q415 2SA1532/BC/-X TRANSISTOR MATSUSHITA R101 NRSA63D-102X M.G.RESISTOR 1k 1/16W Q416 MSC3930/B/-X TRANSISTOR MOTOROLA R102 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416 Q416 2SA1532/BC/-X TRANSISTOR MOTOROLA R103 NRSA63D-222X M.G.RESISTOR 470 1/16W Q417 2SA1532/BC/-X TRANSISTOR MATSUSHITA R104 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q416 NRSA63D-822X M.G.RESISTOR 2.2k 1/16W					1170			1	• •
Q413 2SJ364/QR/-X FET MATSUSHITA R43 NRSA63J-105X M.G.RESISTOR 1M 1/16W Q414 DTA124EUA-X TRANSISTOR ROHM (U) R101 NRSA63D-102X M.G.RESISTOR 1k 1/16W Q416 Q416 MSC3930/B/-X TRANSISTOR MATSUSHITA R102 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W Q417 2SA1532/BC/-X TRANSISTOR MOTOROLA R103 NRSA63D-222X M.G.RESISTOR 470 1/16W Q417 2SA1532/BC/-X TRANSISTOR MATSUSHITA R104 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W NRSA63D-822X M.G.RESISTOR 8.2k 1/16W					D41	MRCAGSLOPOV	M G RESISTOR	0	1/16\//
Q414 DTA124EUA-X Q415 TRANSISTOR ZSA1532/BC/-X Q416 TRANSISTOR MATSUSHITA ROHM MATSUSHITA (U) R101 R101 NRSA63D-102X NRSA63D-222X NRSA63D-222X NRSA63D-222X M.G.RESISTOR 1k 1/16W Q416 MSC3930/B/-X Q417 TRANSISTOR TRANSISTOR MOTOROLA MATSUSHITA R103 R104 R105 NRSA63D-222X NRSA63D-222X NRSA63D-222X NRSA63D-222X NRSA63D-822X M.G.RESISTOR M.G.RESIS									
Q415 2SA1532/BC/-X Q416 TRANSISTOR MSC3930/B/-X Q417 TRANSISTOR TRANSISTOR PRANSISTOR MATSUSHITA MOTOROLA MATSUSHITA R102 R103 R104 R105 NRSA63D-222X NRSA63D-222X NRSA63D-471X NRSA63D-222X M.G.RESISTOR NRSA63D-222X M.G.RESISTOR Q2.2k 2.2k 1/16W 1/16W 1/16W NRSA63D-222X M.G.RESISTOR R104 R105 2.2k 1/16W NRSA63D-222X M.G.RESISTOR NRSA63D-822X 2.2k 1/16W 1/16W NRSA63D-822X								1	
Q416 Q417 MSC3930/B/-X 2SA1532/BC/-X TRANSISTOR MOTOROLA MATSUSHITA R103 R104 R105 NRSA63D-471X NRSA63D-222X NRSA63D-822X M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR R106 NRSA63D-822X 470 M.G.RESISTOR M.G.RESISTOR R106 NRSA63D-822X 1/16W M.G.RESISTOR M.G.RESISTOR R106 NRSA63D-822X									
Q417 2SA1532/BC/-X TRANSISTOR MATSUSHITA R104 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W R105 NRSA63D-822X M.G.RESISTOR 8.2k 1/16W									
R105 NRSA63D-822X M.G.RESISTOR 8.2k 1/16W		MSC3930/B/-X	TRANSISTOR	MOTOROLA					
R105 NRSA63D-822X M.G.RESISTOR 8.2k 1/16W	Q417			MATSUSHITA	R104	NRSA63D-222X			
4/4014					R105	NRSA63D-822X	M.G.RESISTOR	8.2k	
	Q418	2SK663/QR/-X	FET	MATSUSHITA	R109		M.G.RESISTOR	1k	1/16W
			1					1	

Symbol No.	Part No.	Part Name	Description
R110	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R111	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W
R113	NRSA63D-121X	M.G.RESISTOR	120 1/16W
R114	NRSA63D-333X	M.G.RESISTOR	33k 1/16W
R124 R125	NRSA63D-102X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	1k 1/16W 100 1/16W
R128	NRSA63D-101X	M.G.RESISTOR	100 1/16VV
R132	NRSA63D-333X	M.G.RESISTOR	33k 1/16W
R133	NRSA63D-333X	M.G.RESISTOR	33k 1/16W
R134	NRSA63D-333X	M.G.RESISTOR	33k 1/16W
R135 R136	NRSA63D-333X NRSA63D-333X	M.G.RESISTOR M.G.RESISTOR	33k 1/16W 33k 1/16W
R138 R139	NRSA63D-562X NRSA63D-562X	M.G.RESISTOR M.G.RESISTOR	5.6k 1/16W 5.6k 1/16W
R140	NRSA63D-562X	M.G.RESISTOR	5.6k 1/16W
R141	NRSA63D-562X	M.G.RESISTOR	5.6k 1/16W
R142	NRSA63D-562X	M.G.RESISTOR	5.6k 1/16W
R143	NRSA63D-562X	M.G.RESISTOR	5.6k 1/16W
R144	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R201 R202	NRSA63J-105X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	1M 1/16W 10k 1/16W
R206	NRSA63D-222X	M.G.RESISTOR	2.2k 1/16W
R207	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R208	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R209	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R210 R211	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W
R212	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R213	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R214	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R215 R216	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W
R217 R218	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W
R219	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R224	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R225	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R226 R227	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W
R228	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R229	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R230	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R231	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R232 R233	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W
R234	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R235	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R236	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R237	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R239 R241	NRSA63D-101X NRSA63D-102X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 1k 1/16W
R242	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R243	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R244	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R245	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R246 R247	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W
R248	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R249	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R250	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R251 R252	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W
R253	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R254	NRSA63D-222X	M.G.RESISTOR	2.2k 1/16W
R255	NRSA63D-332X	M.G.RESISTOR	3.3k 1/16W
R256	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R257 R258	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W
R259	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R260	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R261	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R262	NRSA63D-101X	M.G.RESISTOR	100 1/16W

Symbol No.	Part No.	Part Name	De	scription
R263 R266 R267	NRSA63D-101X NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	100 100 100	1/16W 1/16W 1/16W
R270	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R271	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R272	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R273	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W (E
R274	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R275 R276	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 100	1/16W 1/16W
R277	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R278	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R279	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R280	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R281	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R282	NRSA63D-101X	M.G.RESISTOR	100 10k	1/16W 1/16W
R288 R289	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k	1/16VV
R290	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R291	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R300	NRSA63D-151X	M.G.RESISTOR	150	1/16W
R301	NRSA63D-111X	M.G.RESISTOR	110	1/16W
R302	NRSA63D-221X	M.G.RESISTOR	220	1/16W
R303	NRSA63D-221X	M.G.RESISTOR	10k	1/16W
R304	NRSA63D-103X NRSA63D-162X	M.G.RESISTOR	1.6k	1/16W 1/16W
R305 R306	NRSA63D-162X NRSA63D-433X	M.G.RESISTOR M.G.RESISTOR	43k	1/16VV
R307	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16VV
R308	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R309	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R310	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R311	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R312	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R313	NRSA63D-103X	M.G.RESISTOR	10k 200	1/16W 1/16W
R314 R315	NRSA63D-201X NRSA63D-473X	M.G.RESISTOR M.G.RESISTOR	47k	1/16VV
R320	NRSA63D-151X	M.G.RESISTOR	150	1/16W
R321	NRSA63D-111X	M.G.RESISTOR	110	1/16W
R322	NRSA63D-221X	M.G.RESISTOR	220	1/16W
R323	NRSA63D-221X	M.G.RESISTOR	220	1/16VV
R324	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R325	NRSA63D-162X	M.G.RESISTOR	1.6k	1/16W
R326	NRSA63D-433X	M.G.RESISTOR	43k	1/16W
R327	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16W
R328	NRSA63D-102X NRSA63D-102X	M.G.RESISTOR	1k 1k	1/16 √ 1/16 √
R329 R330	NRSA63D-102X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100	1/16VV
R331	NRSA63D-101X	M.G.RESISTOR	1k	1/16W
R332	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R333	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R334	NRSA63D-201X	M.G.RESISTOR	200	1/16W
R335	NRSA63D-473X	M.G.RESISTOR	47k	1/16VV
R340	NRSA63D-151X	M.G.RESISTOR	150	1/16W
R341	NRSA63D-111X	M.G.RESISTOR	110 220	1/16VV 1/16VV
R342	NRSA63D-221X	M.G.RESISTOR M.G.RESISTOR	220	1/16VV 1/16VV
R343 R344	NRSA63D-221X NRSA63D-103X	M.G.RESISTOR	10k	1/16 V V
R345	NRSA63D-162X	M.G.RESISTOR	1.6k	1/16 V V
R346	NRSA63D-433X	M.G.RESISTOR	43k	1/16 V V
R347	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16 V V
R348 R349	NRSA63D-102X NRSA63D-102X	M.G.RESISTOR M.G.RESISTOR	1k 1k	1/1 6VV 1/1 6VV
R350	NRSA63D-102X	M.G.RESISTOR	100	1/16 V V
R351	NRSA63D-101X	M.G.RESISTOR	1k	1/16
R352	NRSA63D-102X	M.G.RESISTOR	10k	1/16
R353	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R354	NRSA63D-201X	M.G.RESISTOR	200	1/16 V V
R355	NRSA63J-0R0X	M.G.RESISTOR	0	1/16VV
R356 R357	NRSA63J-0R0X NRSA63J-0R0X	M.G.RESISTOR M.G.RESISTOR	0	1/16 V V 1/16 V V
			1	.,
	NIBCVES I UDUA	M G RECISTOR	lo	1/16\A/
R358 R359	NRSA63J-0R0X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	0 100	1/16 √ √ 1/16 √ √

Symbol No.	Part No.	Part Name	Description
R365	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R366	NRSA63D-473X	M.G.RESISTOR	47k 1/16W
R367	NRSA63D-223X	M.G.RESISTOR	22k 1/16W
R368	NRSA63D-223X	M.G.RESISTOR	22k 1/16W
R369	NRSA63D-223X	M.G.RESISTOR	22k 1/16W
R370	NRSA63D-272X	M.G.RESISTOR	2.7k 1/16W
R371	NRSA63D-471X	M.G.RESISTOR	470 1/16W
R372	NRSA63D-471X	M.G.RESISTOR	470 1/16W
R373	NRSA63D-272X	M.G.RESISTOR	2.7k 1/16W
R374	NRSA63D-471X	M.G.RESISTOR	470 1/16W
R375	NRSA63D-471X	M.G.RESISTOR	470 1/16W
R376	NRSA63D-391X	M.G.RESISTOR	390 1/16W
R377	NRSA63D-561X	M.G.RESISTOR	560 1/16W
R378	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W
R379	NRSA63D-512X	M.G.RESISTOR	5.1k 1/16W
R380	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R381	NRSA63D-391X	M.G.RESISTOR	390 1/16W
R382	NRSA63D-221X	M.G.RESISTOR	220 1/16W
R383	NRSA63D-392X	M.G.RESISTOR	3.9k 1/16W
R384	NRSA63D-391X	M.G.RESISTOR	390 1/16W
R385	NRSA63D-221X	M.G.RESISTOR	220 1/16W
R386	NRSA63D-392X	M.G.RESISTOR	3.9k 1/16W
R387	NRSA63D-391X	M.G.RESISTOR	390 1/16W
R388	NRSA63D-221X	M.G.RESISTOR	220 1/16W
R389	NRSA63D-392X	M.G.RESISTOR	3.9k 1/16W
R390	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R391	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R392	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R393	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R394	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R395	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R396	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R397	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R398	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R399	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R400	NRSA63D-431X	M.G.RESISTOR	430 1/16W
R401	NRSA63D-681X	M.G.RESISTOR	680 1/16W
R402	NRSA63D-562X	M.G.RESISTOR	5.6k 1/16W
R403	NRSA63D-561X	M.G.RESISTOR	560 1/16W
R404	NRSA63D-271X	M.G.RESISTOR	270 1/16W
R405	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R406	NRSA63D-331X	M.G.RESISTOR	330 1/16W
R407	NRSA63D-152X	M.G.RESISTOR	1.5k 1/16W
R408	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R409	NRSA63D-183X	M.G.RESISTOR	18k 1/16W
R410	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W
R411	NRSA63D-392X	M.G.RESISTOR	3.9k 1/16W
R412	NRSA63D-681X	M.G.RESISTOR	680 1/16W
R413	NRSA63D-123X	M.G.RESISTOR	12k 1/16W (U
Dest	NRSA63D-113X	M.G.RESISTOR	11k 1/16W (E
R414	NRSA63D-103X	M.G.RESISTOR	10k 1/16W (U
D445	NRSA63D-912X	M.G.RESISTOR	9.1k 1/16W (E
R415	NRSA63D-392X	M.G.RESISTOR	3.9k 1/16W
R416	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R417	NRSA63D-471X	M.G.RESISTOR	470 1/16W
R418	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W
R419	NRSA63D-563X	M.G.RESISTOR	56k 1/16W (U
DAGG	NRSA63D-683X	M.G.RESISTOR	68k 1/16W (E
R420 R421	NRSA63D-102X NRSA63D-331X	M.G.RESISTOR M.G.RESISTOR	1k 1/16W 330 1/16W
R422		M.G.RESISTOR	30k 1/16W
R422	NRSA63D-303X NRSA63D-564X	M.G.RESISTOR	560k 1/16W (U
R423	NRSA63D-683X	M.G.RESISTOR	68k 1/16W
R429	NRSA63D-083X	M.G.RESISTOR	1k 1/16W
R429	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R431	NRSA63D-102X	M.G.RESISTOR	330 1/16W
R432		M.G.RESISTOR	3.3k 1/16W
R432	NRSA63D-332X		1k 1/16W
R434	NRSA63D-102X NRSA02J-750X	M.G.RESISTOR M.G.RESISTOR	75 1/10W
R435	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W
R436	NRSA63D-102X	M.G.RESISTOR	1k 1/16W
R437	NRSA63D-272X	M.G.RESISTOR	2.7k 1/16W
R440			

Symbol No.	Part No.	Part Name	Description	
R441	NRSA63D-123X	M.G.RESISTOR	12k	1/16W
R442	NRSA63D-152X	M.G.RESISTOR	1.5k	1/16W
R443	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16W
R444	NRSA63D-183X	M.G.RESISTOR	18k	1/16W
R445	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R446	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R447	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R448	NRSA63D-271X	M.G.RESISTOR M.G.RESISTOR	270 3.3k	1/16W 1/16W
R449 R450	NRSA63D-332X NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R451	NRSA63D-104X	M.G.RESISTOR	2.2k	1/16W
R452	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R453	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R454	NRSA63D-331X	M.G.RESISTOR	330	1/16W
R455	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16W
R456	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R457	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R458	NRSA63D-752X	M.G.RESISTOR	7.5k	1/16W (U)
	NRSA63D-432X	M.G.RESISTOR	4.3k	1/16W (E)
R459	NRSA63D-822X	M.G.RESISTOR	8.2k	1/16W
R460	NRSA63D-222X	M.G.RESISTOR M.G.RESISTOR	2.2k 33k	1/16W 1/16W
R461 R462	NRSA63D-333X NRSA63D-684X	M.G.RESISTOR	680k	1/16W
R464	NRSA63D-084X	M.G.RESISTOR	1.5k	1/16W
R465	NRSA63D-561X	M.G.RESISTOR	560	1/16W
R466	NRSA63D-272X	M.G.RESISTOR	2.7k	1/16W
R467	NRSA63D-681X	M.G.RESISTOR	680	1/16W
R470	NRSA63D-221X	M.G.RESISTOR	220	1/16W
R471	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R472	NRSA63D-182X	M.G.RESISTOR	1.8k	1/16W
R480	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R481	NRSA63D-123X	M.G.RESISTOR	12k	1/16W
R482	NRSA63D-152X	M.G.RESISTOR	1.5k	1/16W
R483	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16W 1/16W
R484	NRSA63D-183X	M.G.RESISTOR M.G.RESISTOR	18k 47k	1/16W
R485 R486	NRSA63D-473X NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R487	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R488	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
R489	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R490	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R491	NRSA63D-122X	M.G.RESISTOR	1.2k	1/16W
R492	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R493	NRSA63D-181X	M.G.RESISTOR	180	1/16W
R494	NRSA63D-272X	M.G.RESISTOR	2.7k	1/16W 1/16W
R495	NRSA63D-222X	M.G.RESISTOR M.G.RESISTOR	2.2k 270	1/16W
R496 R497	NRSA63D-271X NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W
R 498	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R498	NRSA63D-104X	M.G.RESISTOR	2.2k	1/16W
R500	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R501	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R502	NRSA63D-331X	M.G.RESISTOR	330	1/16W
R503	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16W
R504	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R505	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R506 R507	NRSA63D-562X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR	5.6k 22k	1/16W 1/16W (E)
				1/16W
R508 R509	NRSA63D-472X NRSA63D-222X	M.G.RESISTOR M.G.RESISTOR	4.7k 2.2k	1/16VV 1/16W
R510	NRSA63D-333X	M.G.RESISTOR	33k	1/16W
R511	NRSA63D-333X	M.G.RESISTOR	39k	1/16W
R512	NRSA63D-393X	M.G.RESISTOR	39k	1/16W
R513	NRSA63D-684X	M.G.RESISTOR	680k	1/16W
R514	NRSA63D-752X	M.G.RESISTOR	7.5k	1/16W
R515	NRSA63D-122X	M.G.RESISTOR	1.2k	1/16W
R516	NRSA63D-561X	M.G.RESISTOR	560	1/16W
R517	NRSA63D-272X	M.G.RESISTOR	2.7k	1/16W
DEGG	NRSA63D-221X	M.G.RESISTOR	220	1/16W
R520	NIDOACO LODOS			
R521	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W 1/16W
	NRSA63J-0R0X NRSA63D-182X NRSA63D-333X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	0 1.8k 33k	1/16W 1/16W (E)

Symbol No.	Part No.	Part Name	Description	
R530	NRSA63D-223X	M.G.RESISTOR	22k 1/16W	
R533	NRSA63D-101X	M.G.RESISTOR	100 1/16W	
R540	NRSA63D-821X	M.G.RESISTOR	820 1/16W	
R541	NRSA63D-122X	M.G.RESISTOR	1.2k 1/16W	
R542	NRSA63D-221X	M.G.RESISTOR	220 1/16W	
N542	NRSA63D-221X	M.G.RESISTOR	220 1/1600	
R543	NRSA63D-122X	M.G.RESISTOR	1.2k 1/16W	
R544	NRSA63D-102X	M.G.RESISTOR	1k 1/16W	
R545	NRSA63D-102X	M.G.RESISTOR	1k 1/16W	
R546	NRSA63D-104X	M.G.RESISTOR	100k 1/16W	
R547	NRSA63D-153X	M.G.RESISTOR	15k 1/16W	
R548	NRSA63D-183X	M.G.RESISTOR	18k 1/16W	
R549	NRSA63D-104X	M.G.RESISTOR	100k 1/16W	
R550	NRSA63D-152X	M.G.RESISTOR	1.5k 1/16W	
R551	NRSA63D-122X	M.G.RESISTOR	1.2k 1/16W (U)	
D	NRSA63D-681X	M.G.RESISTOR	680 1/16W (E)	
R552	NRSA63D-223X	M.G.RESISTOR	22k 1/16W	
R553	NRSA63D-223X	M.G.RESISTOR	22k 1/16W	
R554	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W	
R555	NRSA63D-102X	M.G.RESISTOR	1k 1/16W	
R557	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W	
R558	NRSA63D-102X	M.G.RESISTOR	1k 1/16W	
R559	NRSA63D-560X	M.G.RESISTOR	56 1/16W	
R560	NRSA63D-101X	M.G.RESISTOR	100 1/16W	
R561	NRSA63D-273X	M.G.RESISTOR	27k 1/16W	
R562	NRSA63D-332X	M.G.RESISTOR	3.3k 1/16W	
R563	NRSA63D-101X	M.G.RESISTOR	100 1/16W	
R564	NRSA63D-822X	M.G.RESISTOR	8.2k 1/16W	
R565	NRSA63D-103X	M.G.RESISTOR	10k 1/16W	
R566	NRSA63D-223X	M.G.RESISTOR	22k 1/16W	
R567	NRSA63D-562X	M.G.RESISTOR	5.6k 1/16W	
R568	NRSA63D-153X	M.G.RESISTOR	15k 1/16W	
R569	NRSA63D-333X	M.G.RESISTOR	33k 1/16W	
R570	NRSA63D-223X	M.G.RESISTOR	22k 1/16W	
R571	NRSA63D-223X	M.G.RESISTOR	22k 1/16W	
R572	NRSA63D-394X	M.G.RESISTOR	390k 1/16W	
R573	NRSA63D-564X	M.G.RESISTOR	560k 1/16W	
R574	NRSA63D-333X	M.G.RESISTOR	33k 1/16W	
R575	NRSA63D-104X	M.G.RESISTOR	100k 1/16W	
R576	NRSA63D-104X	M.G.RESISTOR	100k 1/16W	
R578	NRSA63D-221X	M.G.RESISTOR	220 1/16W	
R579	NRSA63J-105X	M.G.RESISTOR	1M 1/16W	
R581	NRSA63D-222X	M.G.RESISTOR	2.2k 1/16W	
R582	NRSA63D-122X	M.G.RESISTOR	1.2k 1/16W	
R583	NRSA63D-101X	M.G.RESISTOR	100 1/16W	
R584	NRSA63D-222X	M.G.RESISTOR	2.2k 1/16W	
R585	NRSA63D-331X	M.G.RESISTOR	330 1/16W	
R586	NRSA63D-682X	M.G.RESISTOR	6.8k 1/16W	
R587	NRSA63D-684X	M.G.RESISTOR	680k 1/16W	
R588	NRSA63D-272X	M.G.RESISTOR	2.7k 1/16W	
R589	NRSA63D-223X	M.G.RESISTOR	22k 1/16W	
R590	NRSA63D-223X	M.G.RESISTOR	22k 1/16W	
R591	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W	
R592	NRSA63D-103X	M.G.RESISTOR	10k 1/16W	
R593	NRSA63D-102X	M.G.RESISTOR	1k 1/16W	
R594	NRSA63D-472X	M.G.RESISTOR	4.7k 1/16W	
R595	NRSA63D-273X	M.G.RESISTOR	27k 1/16W	
R596	NRSA63D-563X	M.G.RESISTOR	56k 1/16W	
R597	NRSA63D-222X	M.G.RESISTOR	2.2k 1/16W	
R598	NRSA63D-333X	M.G.RESISTOR	33k 1/16W	
R599	NRSA63D-273X	M.G.RESISTOR	27k 1/16W	
R600	NRSA63D-104X	M.G.RESISTOR	100k 1/16W	
R601	NRSA63D-273X	M.G.RESISTOR	27k 1/16W	
R602	NRSA63D-103X	M.G.RESISTOR	10k 1/16W	
R603	NRSA63D-153X	M.G.RESISTOR	15k 1/16W	
R604 R605	NRSA63D-104X NRSA63D-153X	M.G.RESISTOR M.G.RESISTOR	100k 1/16W 15k 1/16W	
R606 R610	NRSA63D-104X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	100k 1/16W 10k 1/16W	
R611	NRSA63D-103X	M.G.RESISTOR		
R612	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR	10k 1/16W 10k 1/16W	
R624	NRSA63D-103X	M.G.RESISTOR	100 1/16W	
R625	NRSA63D-101X	M.G.RESISTOR	100 1/16W	
R626	NRSA63D-101X	M.G.RESISTOR	1k 1/16W	
11020	MITOAUGU-TUZA	IVI.G.NESISTON	1/1000	

ymbol No.	Part No.	Part Name	De	scription
R629	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W (U)
R630	NRSA63J-0R0X	M.G.RESISTOR	lo	1/16W (E)
R631	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R632	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R633	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R634	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R635	NRSA63D-223X	M.G.RESISTOR	22k	1/16VV
				1/16VV
3636	NRSA63D-472X	M.G.RESISTOR	4.7k	
R638	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R639	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R640	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R641	NRSA63D-563X	M.G.RESISTOR	56k	1/16W
R642	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
2040	NIDCACOD 100V	M.C. DECICTOR	10k	1/16W
643 644	NRSA63D-103X NRSA63D-472X	M.G.RESISTOR M.G.RESISTOR	4.7k	1/16W
645	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
646	NRSA63D-101X	M.G.RESISTOR	100	1/16W
647	NRSA63J-0R0X	M.G.RESISTOR	0	1/16 W
648	NRSA63D-101X	M.G.RESISTOR	100	1/16W
8649	NRSA63D-101X	M.G.RESISTOR	100	1/16W
650	NRSA63D-101X	M.G.RESISTOR	100	1/16W
651	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
1654			0	1/16VV
554	NRSA63J-0R0X	M.G.RESISTOR	١	1/10/4
655	NRSA63J-100X	M.G.RESISTOR	10	1/16W
356	NRSA63D-101X	M.G.RESISTOR	100	1/16W
700	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
701	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
702	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
703	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
704	NRSA63D-103X	M.G.RESISTOR	2.2k	1/16W
			680	1/16W
705	NRSA63D-681X	M.G.RESISTOR		
706	NRSA63D-272X	M.G.RESISTOR	2.7k	1/16W
07	NRSA63D-561X	M.G.RESISTOR	560	1/16W
708	NRSA63D-391X	M.G.RESISTOR	390	1/16W
09	NRSA63D-823X	M.G.RESISTOR	82k	1/16W
710	NRSA63D-333X	M.G.RESISTOR	33k	1/16W
711	NRSA63D-154X	M.G.RESISTOR	150k	1/16W
712	NRSA63D-154X	M.G.RESISTOR	150k	1/16W
	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16VV
713				
714	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
715	NRSA63D-101X	M.G.RESISTOR	100	1/16VV
716	NRSA63D-101X	M.G.RESISTOR	100	1/16W
17	NRSA63D-101X	M.G.RESISTOR	100	1/16W
720	NRSA63D-471X	M.G.RESISTOR	470	1/16W
23	NRSA63D-331X	M.G.RESISTOR	330	1/16W
724	NRSA63D-331X	M.G.RESISTOR	330	1/16VV
			330	1/16VV
725	NRSA63D-331X	M.G.RESISTOR		
726	NRSA63D-331X	M.G.RESISTOR	330	1/16W
727	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
728	NRSA63D-223X	M.G.RESISTOR	22k	1/16VV
731	NRSA63J-0R0X	M.G.RESISTOR	0	1/16VV
732	NRSA63D-471X	M.G.RESISTOR	470	1/16VV
733	NRSA63D-331X	M.G.RESISTOR	330	1/16 W
734	NRSA63D-331X	M.G.RESISTOR	330	1/16₩
735	NRSA63D-331X		330	1/16 V
		M.G.RESISTOR		
736	NRSA63D-331X	M.G.RESISTOR	330	1/16VV
737	NRSA63D-101X	M.G.RESISTOR	100	1/16W
738	NRSA63D-101X	M.G.RESISTOR	100	1/16 W
739	NRSA63D-101X	M.G.RESISTOR	100	1/16 VV
740	NRSA63D-101X	M.G.RESISTOR	100	1/16VV
741	NRSA63D-101X	M.G.RESISTOR	100	1/16VV
742	NRSA63D-101X	M.G.RESISTOR	100	1/16VV
745	NRSA63D-101X	M.G.RESISTOR	100	1/16W
746	NRSA63D-101X	M.G.RESISTOR	100	1/16 VV
747	NRSA63D-101X	M.G.RESISTOR	100	1/16/
748	NRSA63D-101X	M.G.RESISTOR	100	1/16 V V
			100	1/16VV
749	NRSA63D-101X	M.G.RESISTOR	1	
750	NRSA63D-101X	M.G.RESISTOR	100	1/16 V V
751	NRSA63D-103X	M.G.RESISTOR	10k	1/16 V V
	NRSA63D-103X	M.G.RESISTOR	10k	1/16 V V
753		M.G.RESISTOR	10k	1/16 VV
	NRSA63D-103X	IVI.O.IILOIOTOII		
R754	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR	10k	1/16 V V
R753 ⁻ R754 R755 R756			10k 10k	1/16 √ V 1/16 √ V

Symbol No.	Part No.	Part Name	D	escription	Symbol No.	Part No.
R758	NRSA63D-101X	M.G.RESISTOR	100	1/16W	C220	NCB31CK-473X
R759	NRSA63D-101X	M.G.RESISTOR	100	1/16W	C221	NCB31CK-473X
R760	NRSA63D-101X	M.G.RESISTOR	100	1/16W	C222	NCB31CK-473X
R761	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C223	NCB31CK-473X
R772	NRSA63D-473X	M.G.RESISTOR	47k	1/16W	C224	NCB31CK-473X
R774	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W	C225	NCB31CK-473X
R775	NRSA63D-470X	M.G.RESISTOR	47	1/16W	C226	NCB31CK-473X
R776	NRSA63D-101X	M.G.RESISTOR	100	1/16W	C227	NCB31CK-473X
R777	NRSA63D-101X	M.G.RESISTOR	100	1/16W	C228	NCB31CK-473X
R778	NRSA63D-101X	M.G.RESISTOR	100	1/16W	6000	NODAO INA BOEV
R779	NRSA63D-101X	M.G.RESISTOR	100	1/16W	C229 C232	NCB10JM-335X NCB10JM-335X
R780	NRSA63D-101X	M.G.RESISTOR	100	1/16W	C235	NCB10JM-335X
R781	NRSA63D-101X	M.G.RESISTOR	100	1/16W	C238	NCB11CK-105X
R782	NRSA63D-470X	M.G.RESISTOR	47	1/16W	C240	NCB10JM-335X
R784	NRSA63D-223X	M.G.RESISTOR	22k	1/16W	C241	NCB10JM-335X
R786	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W	C244	NCB11CK-105X
R787	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W	C246	NCB10JM-335X
					C247	NCB10JM-335X
/D400	NIV/D141E 100V	TDIM DECISTOR	1k	Y	C250	NDC31HJ-680X
VR400 VR401	NVP1415-102X NVP1415-502X	TRIM.RESISTOR	5k	CHROMA	C251	NCB31CK-473X
					C252	NCB31CK-473X
					C253	NCB31CK-473X
C1	NEX21AM-106X	E.CAPACITOR	10	10V	C254	NCB31CK-473X
C2	NEX21AM-106X	E.CAPACITOR	10	10V	C255	NCB31CK-473X
C3	NEX21AM-106X	E.CAPACITOR	10	10V	C256	NCB10JM-335X
24	NCB11EK-104X	CER.CAPACITOR	0.1	25V	C259	NCB31CK-473X
25	NEX21AM-106X	E.CAPACITOR	10	10V	C300	NCB11CK-105X
26	NCB11CK-105X	CER.CAPACITOR	1	16V	C301	NCB11CK-105X
27	NCB11CK-105X	CER.CAPACITOR	li	16V	C302	NCB11CK-105X
28	NCB11AK-225X	CER.CAPACITOR	2.2	10V		
29	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	C303	NCB11CK-105X
210	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	C304	NCB31CK-473X
,,,	THOS TOOM OOOX	02111071171011011	0.0		C305	NCB31CK-473X
11	NBE71VM-106X	TAN.CAPACITOR	10	35V	C306	NCB31CK-473X
12	NCB31HK-103X	CER, CAPACITOR	0.01	50V	C307	NCB31CK-473X
213	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C308	NCB11CK-105X
14	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C309	NCB11CK-105X
15	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C310	NCB11CK-105X
216	NDC31HJ-1R0X	CER.CAPACITOR	1p	50V (E)	C311	NCB11CK-105X
17	NDC31HJ-1R0X	CER.CAPACITOR	1p	50V (E)	C312	NCB11CK-105X
101	NCB31CK-473X	CER.CAPACITOR	0.047	16V		
102	NDC31HJ-120X	CER.CAPACITOR	12p	50V	C313	NCB11CK-105X
103	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C314	NCB31CK-473X
			İ		C315	NCB31CK-473X
104	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C316	NCB31CK-473X
2105	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C317	NCB31CK-473X
C106	NDC31HJ-220X	CER.CAPACITOR	22p	50V	C318	NCB31CK-473X
107	NDC31HJ-220X	CER.CAPACITOR	22p	50V	C319	NCB31CK-473X
108	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C320	NCB11CK-105X
109	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C321	NCB11CK-105X
110	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C322	NCB11CK-105X
111	NCB31CK-473X	CER.CAPACITOR	0.047	16V		
112	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C323	NCB11CK-105X
113	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C324	NCB11CK-105X
					C325	NCB11CK-105X
114	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C326	NCB31CK-473X
115	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C327	NCB31CK-473X
116	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C328	NCB31CK-473X
117	NDC31HJ-471X	CER.CAPACITOR	470p	50V	C329	NCB31CK-473X
2118	NCB11CK-105X	CER.CAPACITOR	1	16V	C330	NCB31CK-473X
2120	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	C331	NCB31CK-473X
122	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C332	NCB11CK-105X
C123	NCB31CK-473X	CER.CAPACITOR	0.047	16V		
C201	NDC31HJ-180X	CER.CAPACITOR	18p	50V	C333	NCB11CK-105X
C202	NDC31HJ-7R0X	CER.CAPACITOR	7p	50V	C334	NCB31CK-473X
				F014	C335	NCB10JM-335X
C203	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C336	NCB10JM-335X
C204	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	C339	NCB10JM-335X
C205	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	C340	NCB10JM-335X
C207	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C344	NCB10JM-335X
C208	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C345	NCB10JM-335X
C209	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C348	NCB31CK-473X
210	NCB11CK-105X	CER.CAPACITOR	1	16V	C349	NCB31CK-473X
C211	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V		
C214	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	C350	NCB11CK-105X
	INT 23102 179V	CER.CAPACITOR	0.047	16V	C351	NCB10JM-335X
	NCB31CK-473X		l l		COEC	NICESICV ATOV
C214 C218	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C352 C353	NCB31CK-473X NCB31CK-473X

Symbol No.	Part No.	Part Name	Description
C220	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C221	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C222	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C223	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C224	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C225	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C226	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C227	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C228	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C229 C232	NCB10JM-335X NCB10JM-335X	CER.CAPACITOR CER.CAPACITOR	3.3 6.3V 3.3 6.3V
C235	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C238	NCB11CK-105X	CER.CAPACITOR	1 16V
C240	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C241	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C244	NCB11CK-105X	CER.CAPACITOR	1 16V
C246	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C247	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C250	NDC31HJ-680X	CER.CAPACITOR	68p 50V
C251	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C252	NCB31CK-473X	CER.CAPACITOR	0.047 16V 0.047 16V
C253	NCB31CK-473X	CER.CAPACITOR	4
C254 C255	NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	0.047 16V 0.047 16V
C256	NCB31CK-473X NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C256	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C300	NCB11CK-105X	CER.CAPACITOR	1 16V
C300	NCB11CK-105X	CER.CAPACITOR	1 16V
C302	NCB11CK-105X	CER.CAPACITOR	1 16V
C303	NCB11CK-105X	CER.CAPACITOR	1 16V
C304	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C305	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C306	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C307	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C308	NCB11CK-105X	CER.CAPACITOR	1 16V
C309	NCB11CK-105X	CER.CAPACITOR	1 16V
C310	NCB11CK-105X	CER.CAPACITOR	1 16V
C311	NCB11CK-105X	CER.CAPACITOR	1 16V
C312	NCB11CK-105X	CER.CAPACITOR	1 16V
C313	NCB11CK-105X	CER.CAPACITOR	1 16V
C314	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C315	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C316	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C317	NCB31CK-473X	CER.CAPACITOR	0.047 16V 0.047 16V
C318	NCB31CK-473X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	0.047 16V 1 0.047 16V
C319 C320	NCB11CK-105X	CER.CAPACITOR	1 16V
C320	NCB11CK-105X	CER.CAPACITOR	1 16V
C322	NCB11CK-105X	CER.CAPACITOR	1 16V
C323	NCB11CK-105X	CER.CAPACITOR	1 16V
C324	NCB11CK-105X	CER.CAPACITOR	1 16V
C325	NCB11CK-105X	CER.CAPACITOR	1 16V
C326	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C327	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C328	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C329	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C330	NCB31CK-473X	CER.CAPACITOR	0.047 16V 0.047 16V
C331 C332	NCB31CK-473X NCB11CK-105X	CER.CAPACITOR CER.CAPACITOR	0.047 16V 1 16V
C333	NCB11CK-105X	CER.CAPACITOR	1 16V
C334	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C335	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C336	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C339	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C340	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C344	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C345	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C348 C349	NCB31CK-473X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	0.047 16V 0.047 16V
			0.047
C350 C351	NCB11CK-105X NCB10JM-335X	CER.CAPACITOR	1 16V 3.3 6.3V
C352	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C353	NCB31CK-473X	CER.CAPACITOR	0.047 16V

Symbol No.	Part No.	Part Name	Desc	ription
C354	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C355	NCB11CK-105X	CER.CAPACITOR	1	16V
C356	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C357	NCB11CK-105X	CER.CAPACITOR	1	16V
C358	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V
C359	NDC31HJ-220X	CER.CAPACITOR	22p	50V
C360	NDC31HJ-220X	CER.CAPACITOR	22p	50V
C361 C362	NDC31HJ-220X	CER.CAPACITOR	22p	50V
C362	NCB31CK-473X NBE51AM-476X	CER.CAPACITOR	0.047	16V 10V
C365	NEH90GM-227X	E.CAPACITOR	220	100
C366	NEH90GM-227X	E.CAPACITOR	220	
C367	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C368	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C400	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C401	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C402	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C403	NDC31HJ-180X	CER.CAPACITOR	18p	50V
C405	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C406 C408	NCB31CK-473X NBE41CM-106X	CER.CAPACITOR TAN.CAPACITOR	0.047	16V 16V
C409	NBE41CM-106X	TAN.CAPACITOR	10	16V
C410	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C411	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C412	NDC31HJ-220X	CER.CAPACITOR	22p	50V
C413	NDC31HJ-470X	CER.CAPACITOR	47p	50V
C414	NDC31HJ-470X	CER.CAPACITOR	47p	50V
C415	NBE21VM-224X	TAN.CAPACITOR	0.22	35V
C416	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C417	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C418 C419	NCB31CK-473X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	0.047	16V 16V
C420	NCB31HK-103X	CER.CAPACITOR	0.047	50V
C421	NCB311K-103X	CER.CAPACITOR	0.047	16V
C422	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C423	NDC31HJ-220X	CER.CAPACITOR	22p	50V (U)
	NDC31HJ-270X	CER.CAPACITOR	27p	50V (E)
C424	NDC31HJ-180X	CER.CAPACITOR	18p	50V (U)
	NDC31HJ-270X	CER.CAPACITOR	27p	50V (E)
C425	NDC31HJ-220X	CER.CAPACITOR	22p	50V
C426	NDC31HJ-470X	CER.CAPACITOR	47p	50V
C427 C428	NDC31HJ-470X NBE21VM-224X	CER.CAPACITOR	47p	50V (E)
C429	NCB31CK-473X	CER.CAPACITOR	0.22	35V 16V
C430	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C431	NDC31HJ-6R0X	CER.CAPACITOR	6p	50V (U)
C432	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C433	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C434	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C435	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C436	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C437	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C438	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C439	NDC31HJ-220X NDC31HJ-150X	CER.CAPACITOR CER.CAPACITOR	22p 15p	50V (U) 50V (E)
C440	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C441	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C442	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C443	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C444	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C445	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C446	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C447	NDC31HJ-100X	CER.CAPACITOR	10p	50V
C448 C449	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C449 C450	NCB31CK-473X NCB31CK-473X	CER.CAPACITOR	0.047	16V 16V
C450	NCB31HK-222X	CER.CAPACITOR	2200p	50V
C452	NCB31HK-222X	CER.CAPACITOR	2200p	50V
C453	NCB11CK-105X	CER.CAPACITOR	1	16V
C454	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C455	NCB31HK-103X	CER.CAPACITOR	0.01	50V
	NDC31HJ-270X	CER.CAPACITOR	27p	50V (U)
C460	140001110-2707			

ymbol No.	Part No.	Part Name	Description		
C461	NCB31EK-473X	CER.CAPACITOR	0.047	25V	
C462	NCB31EK-473X	CER.CAPACITOR	0.047	25V	
C463	NDC31HJ-560X	CER.CAPACITOR	56p	50V	
C464	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
C465	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
C466	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	
C467	NDC31HJ-151X	CER.CAPACITOR	150p	50V (U	
	NDC31HJ-121X	CER.CAPACITOR	120p	50V (E	
C468 C469	NCB31CK-473X	CER.CAPACITOR	0.047 0.047	16V 16V	
469 470	NCB31CK-473X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	0.047	16V	
471	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
472	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
473	NDC31HJ-101X	CER.CAPACITOR	100p	50V (E	
474	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
475	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	
2476 2477	NCB11CK-105X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	1 0.047	16V 16V	
C480 C481	NCB10JM-335X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	3.3 0.047	6.3V 16V	
481	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
2483	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
491	NBE21EM-474X	TAN.CAPACITOR	0.47	25V	
492	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
493	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
494	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
495	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V	
196	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
498	NCB31CK-104X	CER.CAPACITOR	0.1	16V	
199	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
01	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
502	NDC31HJ-330X	CER.CAPACITOR	33p	50V 16V	
503 504	NCB31CK-473X NCB10JM-335X	CER.CAPACITOR CER.CAPACITOR	0.047 3.3	6.3V	
505	NCB103M-335X	CER.CAPACITOR	3.3	6.3V	
700	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
701	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
702	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
703	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
04	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
05	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
06	NCB31CK-473X NCB10JM-335X	CER.CAPACITOR CER.CAPACITOR	0.047 3.3	16V 6.3V	
07 09	NEX21AM-106X	E.CAPACITOR	10	10V	
10	NEX21AM-106X	E.CAPACITOR	10	10V	
711	NEX21CM-225X	E.CAPACITOR	2.2	16V	
712	NEX21CM-225X	E.CAPACITOR	2.2	16V	
713	NCB31CK-104X	CER.CAPACITOR	0.1	16V	
714	NCB31HK-682X	CER.CAPACITOR	6800p	50V	
715	NDC31HJ-180X	CER.CAPACITOR	18p	50V	
716	NCB31CK-104X	CER.CAPACITOR	0.1	16V 6.3V	
717	NCB10JM-335X NCB31HK-103X	CER.CAPACITOR CER.CAPACITOR	3.3 0.01	5.3V 50V	
718	NCB31HK-103X	CER.CAPACITOR .	0.01	5 0 V	
720	NCB31HK-103X	CER.CAPACITOR	0.01	50V	
721	NCB11CK-105X	CER.CAPACITOR	1	16V	
722	NDC31HJ-180X	CER.CAPACITOR	18p	50V	
723	NDC31HJ-180X	CER.CAPACITOR	18p	5 0 V	
724	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
725	NCB31CK-473X NCB31CK-473X	CER.CAPACITOR	0.047	16V 16V	
726	NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR	0.047	16V 16V	
728	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
729	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
730	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
731	NCB31CK-473X	CER.CAPACITOR	0.047	16V	
732	NCB31CK-473X	CER.CAPACITOR	0.047	1 <i>6</i> V 6.3V	
	NCB10JM-335X	CER.CAPACITOR	3.3		
734	NCB31CK-104X NCB10JM-335X	CER.CAPACITOR CER.CAPACITOR	0.1 3.3	16V 6.3V	
2736	NCB10JM-335X NCB31CK-104X	CER.CAPACITOR	0.1	6.3V 16V	
2737	NCB31CK-104X	CER.CAPACITOR	0.1	16V	

Symbol No.	Part No.	Part Name	Descript	ion
C739 C740 C741 C742 C743	NCB31CK-104X NCB10JM-335X NFV41HJ-152X NCB31CK-473X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR FILM CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.1 3.3 1500p 0.047 0.047	16V 6.3V 50V 16V 16V
C744 C745 C746 C747 C748 C749 C750 C751 C752	NCB10JM-335X NCB31CK-104X NCB10JM-335X NCB31CK-104X NCB10JM-335X NCB31CK-104X NCB31CK-104X NFV41HJ-152X NFV41HJ-152X NBE41CM-106X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR FILM CAPACITOR FILM CAPACITOR TAN.CAPACITOR	3.3 0.1 3.3 0.1 3.3 3.3 0.1 1500p 1500p	6.3V 16V 6.3V 16V 6.3V 6.3V 16V 50V 50V
C754 C755 C756 C757 C758 C759 C760 C762 C764 C765	NBE41CM-106X NBE41CM-106X NBE41CM-106X NCB11CK-105X NCB11CK-105X NCB10JM-335X NCB11CK-105X NCB11CK-105X NCB11CK-105X NCB11CK-105X NCB11CK-105X	TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	10 10 10 1 1 3.3 1 1 1	16V 16V 16V 16V 6.3V 16V 16V 16V
C767 C769 C771 C772 C773 C774 C775 C776 C777	NCB11CK-105X NCB10JM-335X NCB31CK-473X NFV41HJ-152X NCB31CK-104X NCB10JM-335X NCB10JM-335X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB10JM-335X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR FILM CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	1 3.3 0.047 1500p 0.1 3.3 3.3 0.1 0.1 3.3	16V 6.3V 16V 50V 16V 6.3V 6.3V 16V 16V 6.3V
C779 C780 C781	NCB31CK-104X NCB10JM-335X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.1 3.3 0.1	16V 6.3V 16V
L101 L201 L202 L400 L700 L701 L702	NOL054K-470X NOL054K-1R2X NOL054K-1R2X NOL054K-120X NOL054K-3R3X NOL054K-101X NOL054K-101X	COIL COIL COIL COIL COIL COIL	47uH 1.2uH 1.2uH 12uH 3.3uH 100uH	
LC1 LC300 LC400 LC402 LC403 LC404 LC405 LC406 LC700 LC701	PGZ01972Z SCV2906-001X NQR0234-001X SCV2030-001W SCV2031-001V NQR0089-001X NQR0090-001X NQR0122-001X PGZ01972Z SSV3036-12R3Y PGZ01972Z	LC FILTER	LC1-202,301 LC400,401 LC406-410	(U) (E)
X101 X201 X401 X402	QAX0328-001X QAX0031-001 NAX0022-001X NAX0021-001X QAX0496-001	CRYSTAL CRYSTAL CRYSTAL CRYSTAL CRYSTAL	4.9MHz 49.5MHz 14.31818MHz 17.73447MHz 54MHz	(U) (E)
TH700	NAD0001-103X	THERMISTOR	10k	
S201	NSW0022-002X	DIP SW		
CN1	QGA1201F2-06X	CONNECTOR	6PIN	

CN14 QGA1201F2-14X CONNECTOR 24PIN CN32 QGF1012F1-18X CONNECTOR 18PIN CN44 QGF1012F1-14X CONNECTOR 14PIN CN45 QGA1201F2-04X CONNECTOR 4PIN CN46 SCV2850-040X CONNECTOR 4DPIN CN56 SCV2615-28 CONNECTOR 28PIN CN58 QGA1201F2-03X CONNECTOR 3PIN CN59 QGA1201F2-03X CONNECTOR 3PIN CN59 QGA1201F2-02X CONNECTOR 3PIN CN60 QGA1201F2-02X CONNECTOR 2PIN TP1 NNZ0009-001X TEST POINT TP1-403 FL300 PL301 PL502 PL FL FILTER FL301 NQR0206-001 FL FILTER FL302 NQR0206-001 FL FILTER FL303 NQR0206-001 FL FILTER FL400 NQR0208-001 FL FILTER FL401 NQR0208-001 FL FILTER FL400 NQR0208-001 FL FILTER FL400 NQR0208-001 FL FILTER FL400 NQR0208-001 FL FILTER FL502 NQR0208-001 FL FILTER FL502 NQR0208-001 FL FILTER FL503 NQR0208-001 FL FILTER FL504 NQR0208-001 FL FILTER FL505 NGR0208-001 FL FILTER FL506 NGR0208-001 FL FILTER FL507 NGR0208-001 FL FILTER FL508 NGR0208-001 FL FILTER FL509 NGR0208-001 FL FILTER FL509 NGR0208-001 FL FILTER FL509 NGR0208-001 FL FILTER FL509 NGR0208-001 FL FILTER FL500 NGR020	Description	Part Name	Part No.	Symbol No.
TP1 NNZ0009-001X TEST POINT TP1-403 FL300 NQR0206-001 FL FILTER FL302 NQR0206-001 FL FILTER FL400 NQR0207-001 FL FILTER FL401 NQR0208-001 FL FILTER FL401 NQR0208-001 FL FILTER	NIV NIV NIV NIV NIV	CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR	QGF1012F1-24X QGF1012F1-18X QGF1012F1-14X QGA1201F2-04X SCV2850-040X SSV2615-28 QGA1201F2-03X	CN32 CN43 CN44 CN45 CN46 CN56 CN58
FL300 FL301 FL301 FL301 FL302 NQR0206-001 FL FILTER FL400 NQR0207-001 FL FILTER FL401 NQR0208-001 FL FILTER FL FILTER FL FILTER FL FILTER K1 SCV2662-027 K4 NRSA02J-0R0X K7 SCV2662-027 FERRITE BEADS K7 SCV2662-027 FERRITE BEADS K7 SCV2662-027 FERRITE BEADS K7,8,200-701 K9 PGZ00354 FERRATE BEADS K200 FERRITE BEADS K7,8,200-701 FERRITE BEADS K9,11 K200-701 TB1 NNZ0006-001X EARTH TERMINAL TB1,2 SL1 SC32250-001 SHIELD PLATE	N	CONNECTOR	QGA1201F2-02X	CN60
FL301 NQR0206-001 FL FILTER FL400 NQR0206-001 FL FILTER FL FILTER FL400 NQR0208-001 FL FILTER FL	-403	TEST POINT	NNZ0009-001X	TP1
K4 NRSA02J-0ROX M.G.RESISTOR 0 1/10 K7 SCV2662-027 FERRITE BEADS K7,8,200-701 (6 K9 PGZ00354 FERRATE BEADS K9,11 K200-701 (7 TB1 NNZ0006-001X EARTH TERMINAL TB1,2 SL1 SC32250-001 SHIELD PLATE TB1,2		FL FILTER FL FILTER FL FILTER	NQR0206-001 NQR0206-001 NQR0207-001	FL301 FL302 FL400
SL1 SC32250-001 SHIELD PLATE	1/10W 8,200-701 (E) 11	M.G.RESISTOR FERRITE BEADS FERRATE BEADS	NRSA02J-0R0X SCV2662-027 PGZ00354	K4 K7 K9
	,2	EARTH TERMINAL	NNZ0006-001X	TB1
SP1 SSV1568-105 FELT SPACER FOR X402		SHIELD PLATE	SC32250-001	SL1
	R X402	FELT SPACER	SSV1568-105	SP1

6.7 SS/RFP BOARD ASSEMBLY PARTS LIST 07

SCH	(2538-00A		07
Symbol No.	Part No.	Part Name	Description
IC101 IC102 IC151 IC152 IC201 IC202 IC301 IC302 IC303 IC304	CLC452AJM5-X CLC452AJM5-X UPC29M05T-X MC33269DR2-3.3 CLC452AJM5-X CLC452AJM5-X AN3740FAP NJM2902M-X CLC450AJM5-X CLC450AJM5-X	I.C.(M)	NATIONAL SEMICO NATIONAL SEMICO NEC MOTOROLA NATIONAL SEMICO NATIONAL SEMICO MATSUSHITA JRC NATIONAL SEMICO NATIONAL SEMICO NATIONAL SEMICO NATIONAL SEMICO
IC401 IC402 IC403 IC404 IC501 IC502 IC601 IC602 IC603	AN3740FAP NJM2902M-X CLC450AJM5-X CLC450AJM5-X DS90LV032TM-X DS90LV031TM-X SC78148GF-026 UPD71055GB-10 PLSC1235	I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M)	MATSUSHITA JRC NATIONAL SEMICO NATIONAL SEMICO NATIONAL SEMICO NATIONAL SEMICO NEC NEC MBM29F002T-70PD
SK603	SCV2768-001X	IC SOCKET	FOR IC603
IC604 IC605 IC606 IC607 IC608 IC609 IC610 IC611 IC612 IC613	TC74VHC573FT-X SN74LV138APW-X NM24C02EM8-X TC7W126FU-X TC7W74FU-X TC7W74FU-X TC7SH04FU-X TA75W01FU-X TC4W53FU-X TC7SH86FU-X	I.C.(M)	TOSHIBA TEXAS NATIONAL SEMICO TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA
IC614 IC615 IC616 IC617 IC618 IC619 IC620 IC621 IC622 IC623	TA75S01F-X BA7043FS-X TC4W53FU-X TC7S14FU-X M66312FP-W TC7S14FU-X MN12821-QR-X TC7S14FU-X TC7S14FU-X BA6285FP-X	I.C.(M)	TOSHIBA ROHM TOSHIBA TOSHIBA MITSUBISHI TOSHIBA MATSUSHITA TOSHIBA TOSHIBA ROHM
IC624 IC625 IC801 IC802 IC803 IC804 IC805 IC806 IC807 IC808	TA75S01F-X TC7SH04FU-X TC4W66FU-X NJM2068V-X TA75S393F-W NJM2068V-X TA75W393FU-X TC7SH86FU-X TC7SH86FU-X TC7SH86FU-X	I.C.(M)	TOSHIBA TOSHIBA TOSHIBA JRC TOSHIBA JRC TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA
IC809 IC810 IC901 IC902	BA6862FS-X TC4W66FU-X MB3782PF-X TA75W01FU-X	I.C.(M) I.C.(M) I.C.(M) I.C.(M)	ROHM TOSHIBA FUJITSU TOSHIBA
Q101 Q151 Q152 Q153 Q154 Q201 Q301 Q302 Q303 Q401	2SC3735/4-5/-X 2SA1577/CR/-X DTC124EUA-X 2SA1577/CR/-X DTC124EUA-X 2SC3735/4-5/-X 2SC3735/4-5/-X 2SC3735/4-5/-X DTC124EUA-X 2SC3735/4-5/-X DTC124EUA-X 2SA1577/QR/-X	TRANSISTOR	NEC ROHM ROHM ROHM NEC ROHM NEC ROHM NEC ROHM
Q402 Q403 Q601 Q602 Q603	2SC3735/4-5/-X DTC124EUA-X 2SB1073/PQ/-X 2SB1073/PQ/-X DTC124EUA-X	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	NEC ROHM MATSUSHITA MATSUSHITA ROHM

Symbol No.	Part No.	Part Name	Description
Q604 Q605 Q606 Q607 Q608	DTC124EUA-X 2SC4081/QRS/-X DTA114EUA-X DTC124EUA-X 2SC2873/Y/-X	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	ROHM ROHM ROHM ROHM TOSHIBA
Q609 Q611 Q612 Q801 Q802 Q803 Q804 Q805 Q806 Q807	DTC124EUA-X DTC124EUA-X 2SC4097/QR/-X DTA114EUA-X 2SC4081/QRS/-X 2SC4081/QRS/-X DTC124EUA-X 2SC4081/QRS/-X DTA114EUA-X 2SC4081/QRS/-X	TRANSISTOR	ROHM ROHM ROHM ROHM ROHM ROHM ROHM ROHM
Q808 Q809 Q810 Q811 Q901 Q902 Q903 Q904 Q905 Q906	2SC4081/QRS/-X 2SB1073/PQ/-X 2SB1073/PQ/-X 2SB1073/PQ/-X 2SJ279S-X 2SC4097/QR/-X 2SA1577/QR/-X 2SC4097/QR/-X 2SC4097/QR/-X 2SA1577/QR/-X	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR FET TRANSISTOR TRANSISTOR FET TRANSISTOR FET TRANSISTOR TRANSISTOR	ROHM MATSUSHITA MATSUSHITA MATSUSHITA HITACHI ROHM ROHM HITACHI ROHM ROHM ROHM
Q907 Q908 Q909	2SJ279S-X 2SC4097/QR/-X 2SA1577/QR/-X	FET TRANSISTOR TRANSISTOR	HITACHI ROHM ROHM
D301 D401 D601 D602 D603 D604 D605 D606 D607 D608	DAN202U-X DAN202U-X DAN202U-X MA738-X DAN202U-X DAN202U-X DAN202U-X MA3120/M/-X MA3075/M/-X DAN202U-X	DIODE DIODE DIODE DIODE DIODE DIODE DIODE DIODE ZENER DIODE ZENER DIODE DIODE	ROHM ROHM ROHM MATSUSHITA ROHM ROHM ROHM MATSUSHITA MATSUSHITA ROHM
D609 D801 D802 D803 D804 D805 D901 D902 D903 D904	DAN202U-X DAP202U-X MA3130/M/-X DAN202U-X MA3091/M/-X MA3020-X MA736-X MA736-X MA3056/M/-X MA736-X	DIODE DIODE ZENER DIODE DIODE ZENER DIODE ZENER DIODE DIODE DIODE DIODE DIODE DIODE DIODE	ROHM ROHM MATSUSHITA ROHM MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA
R101 R102 R103 R104 R105 R106 R107 R108 R109 R110	NRSA63D-121X NRSA63D-221X NRSA63D-222X NRSA63D-103X NRSA63D-103X NRSA63D-681X NRSA63D-662X NRSA63D-102X NRSA63D-102X NRSA63D-171X NRSA63D-153X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	120 1/16W 220 1/16W 2.2k 1/16W 10k 1/16W 10k 1/16W 680 1/16W 5.6k 1/16W 1k 1/16W 470 1/16W 15k 1/16W
R111 R112 R113 R114 R115 R116 R117 R118 R119	NRSA63D-682X NRSA63D-101X NRSA63D-152X NRSA63D-220X NRSA63D-820X NRSA63D-121X NRSA63D-121X NRSA63D-221X NRSA63D-103X NRSA63D-103X	M.G.RESISTOR	6.8k 1/16W 100 1/16W 1.5k 1/16W 22 1/16W 82 1/16W 120 1/16W 220 1/16W 2.2k 1/16W 10k 1/16W 10k 1/16W
R121 R122	NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 100 1/16W

[SS/RFP]

Symbol No.	Part No.	Part Name	De	escription	Symbol No.	Part No.	Part Name		Description
R123	NRSA63D-102X	M.G.RESISTOR	1k	1/16W	R361	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R123	NRSA63D-750X	M.G.RESISTOR	75	1/16W	R362	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
					R363	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
	NRSA63D-220X	M.G.RESISTOR	22	1/16W				10k	1/16W
R151	NRSA63D-152X	M.G.RESISTOR	1.5k	1/16W	R364	NRSA63D-103X	M.G.RESISTOR		
R159	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16W	R365	NRSA63D-391X	M.G.RESISTOR	390	1/16W
R163	NRSA63D-392X	M.G.RESISTOR	3.9k	1/16W				1	
R165	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	R370	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16W
	NRSA63D-121X	M.G.RESISTOR	120	1/16W	R371	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
N201	INNOAUSD-121A	W.G.NESISTON	120	17.1011	R403	NRSA63J-100X	M.G.RESISTOR	10	1/16W
				4 (4 0) 4 (M.G.RESISTOR	470	1/16W
R202	NRSA63D-221X	M.G.RESISTOR	220	1/16W	R404	NRSA63D-471X			
R203	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	R405	NRSA63D-471X	M.G.RESISTOR	470	1/16W
R204	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R406	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W
	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R407	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
R206	NRSA63D-681X	M.G.RESISTOR	680	1/16W	R408	NRSA63D-153X	M.G.RESISTOR	15k	1/16W
		M.G.RESISTOR	5.6k	1/16W	R409	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R207	NRSA63D-562X			1/16W	R414	NRSA63D-221X	M.G.RESISTOR	220	1/16W
R208	NRSA63D-102X	M.G.RESISTOR	1k		11414	14113A03D-221A	WI.G. HESISTON	220	1,1011
R209	NRSA63D-471X	M.G.RESISTOR	470	1/16W			A A DEGISTOR	400	1/10\4/
R210	NRSA63D-153X	M.G.RESISTOR	15k	1/16W	R415	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R211	NRSA63D-682X	M.G.RESISTOR	6.8k	1/16W	R416	NRSA63D-680X	M.G.RESISTOR	68	1/16W
			1		R418	NRSA63D-820X	M.G.RESISTOR	82	1/16W
R212	NRSA63D-101X	M.G.RESISTOR	100	1/16W	R419	NRSA63D-820X	M.G.RESISTOR	82	1/16W
			1.5k	1/16W	R420	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R213	NRSA63D-152X	M.G.RESISTOR		.,		NRSA63D-153X	M.G.RESISTOR	15k	1/16W
R214	NRSA63D-220X	M.G.RESISTOR	22	1/16W	R422				
R215	NRSA63D-820X	M.G.RESISTOR	82	1/16W	R423	NRSA63D-152X	M.G.RESISTOR	1.5k	1/16W
R216	NRSA63D-121X	M.G.RESISTOR	120	1/16W	R424	NRSA63D-121X	M.G.RESISTOR	120	1/16W
R217	NRSA63D-221X	M.G.RESISTOR	220	1/16W	R425	NRSA63D-680X	M.G.RESISTOR	68	1/16W
R218	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	R428	NRSA63J-0R0X	M.G.RESISTOR	lo	1/16W
			10k	1/16W					
R219	NRSA63D-103X	M.G.RESISTOR			R431	NRSA63D-272X	M.G.RESISTOR	2.7k	1/16W
R220	NRSA63D-103X	M.G.RESISTOR	10k	1/16W			M.G.RESISTOR	3.3k	1/16W
R221	NRSA63D-101X	M.G.RESISTOR	100	1/16W	R432	NRSA63D-332X			
					R433	NRSA63D-822X	M.G.RESISTOR	8.2k	1/16W
R222	NRSA63D-101X	M.G.RESISTOR	100	1/16W	R434	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W
R223	NRSA63D-102X	M.G.RESISTOR	1k	1/16W	R435	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R224	NRSA63D-750X	M.G.RESISTOR	75	1/16W	R436	NRSA63D-151X	M.G.RESISTOR	150	1/16W
			22	1/16W	R437	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
R225	NRSA63D-220X	M.G.RESISTOR						10k	1/16W
R303	NRSA63J-100X	M.G.RESISTOR	10	1/16W	R438	NRSA63D-103X	M.G.RESISTOR		
R304	NRSA63D-471X	M.G.RESISTOR	470	1/16W	R439	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R305	NRSA63D-471X	M.G.RESISTOR	470	1/16W	R440	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
R306	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W					
R307	NRSA63D-223X	M.G.RESISTOR	22k	1/16W	R441	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
		M.G.RESISTOR	15k	1/16W	R442	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R308	NRSA63D-153X	W.G.NESISTON	138	1/1000	R443	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
				4.44.00.44					1/16W
R309	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R444	NRSA63D-222X	M.G.RESISTOR	2.2k	
R314	NRSA63D-221X	M.G.RESISTOR	220	1/16W	R445	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R315	NRSA63D-101X	M.G.RESISTOR	100	1/16W	R452	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R316	NRSA63D-680X	M.G.RESISTOR	68	1/16W	R453	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R318	NRSA63D-820X	M.G.RESISTOR	82	1/16W	R455	NRSA63D-181X	M.G.RESISTOR	180	1/16W
R319		M.G.RESISTOR	82	1/16W	R456	NRSA63D-122X	M.G.RESISTOR	1.2k	1/16W
	NRSA63D-820X				R457	NRSA63D-181X	M.G.RESISTOR	180	1/16W
R320	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	N457	MUSA02D-101V	W.G.NESISTON	100	1/1011
R322	NRSA63D-153X	M.G.RESISTOR	15k	1/16W					1 (2 (2) 4 (
R323	NRSA63D-152X	M.G.RESISTOR	1.5k	1/16W	R458	NRSA63D-151X	M.G.RESISTOR	150	1/16W
R324	NRSA63D-121X	M.G.RESISTOR	120	1/16W	R459	NRSA63D-151X	M.G.RESISTOR	150	1/16W
					R460	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16W
R325	NRSA63D-680X	M.G.RESISTOR	68	1/16W	R461	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
			0	1/16W	R462	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R328	NRSA63J-0R0X	M.G.RESISTOR				NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R331	NRSA63D-272X	M.G.RESISTOR	2.7k	1/16W	R463			10k	1/16W
R332	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W	R464	NRSA63D-103X	M.G.RESISTOR		
R333	NRSA63D-822X	M.G.RESISTOR	8.2k	1/16W	R465	NRSA63D-391X	M.G.RESISTOR	390	1/16W
R334	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W	R470	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16W
R335	NRSA63D-102X	M.G.RESISTOR	1k	1/16W	R471	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
R336	NRSA63D-151X	M.G.RESISTOR	150	1/16W					
			22k	1/16W	R501	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R337	NRSA63D-223X	M.G.RESISTOR							1/16W
R338	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R502	NRSA63D-820X	M.G.RESISTOR	82	
					R503	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R339	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R507	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R340	NRSA63D-223X	M.G.RESISTOR	22k	1/16W	R508	NRSA63D-123X	M.G.RESISTOR	12k	1/16W
R341	NRSA63D-102X	M.G.RESISTOR	1k	1/16W	R515	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16W
R342		M.G.RESISTOR	10k	1/16W	R517	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
	NRSA63D-103X					NRSA63D-103X	M.G.RESISTOR	82	1/16W
R343	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R519				1/16W
R344	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	R520	NRSA63D-820X	M.G.RESISTOR	82	
R345	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R521	NRSA63D-820X	M.G.RESISTOR	82	1/16W
R352	NRSA63D-103X	M.G.RESISTOR	10k	1/16W					
R353	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	R522	NRSA63D-820X	M.G.RESISTOR	82	1/16W
R355			180	1/16W	R523	NRSA63D-101X	M.G.RESISTOR	100	1/16W
מפכה	NRSA63D-181X	M.G.RESISTOR	100	1/1000					1/16W
	1				R525	NRSA63D-820X	M.G.RESISTOR	82	
R356	NRSA63D-122X	M.G.RESISTOR	1.2k	1/16W	R528	NRSA63D-820X	M.G.RESISTOR	82	1/16W
		I	180	1/16W	R529	NRSA63D-820X	M.G.RESISTOR	82	1/16W
R357	NRSA63D-181X	M.G.RESISTOR	1100						
	NRSA63D-181X		150	1/16W	R601	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R357 R358	NRSA63D-181X NRSA63D-151X	M.G.RESISTOR	150	1/16W		NRSA63D-102X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	1k 100	1/16W
R357	NRSA63D-181X				R601				

Symbol No.	Part No.	Part Name	Descrip	tion
R604	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R605	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R606	NRSA63J-100X	M.G.RESISTOR	10	1/16W
R607	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R608	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R609	NRSA63D-153X	M.G.RESISTOR	15k	1/16W
R610	NRSA63D-393X	M.G.RESISTOR	39k	1/16W
R612	NRS12BJ-101X	M.G.RESISTOR	100	1/2W
R613	NRSA63D-471X	M.G.RESISTOR	470	1/16W
R614	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R615	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R616	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
11010	11110/1000 4/0/1	W. G. 1120101011	177	.,
R617	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R618	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R619	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R620	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R621	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R622	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R623	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R624	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R625	NRSA63D-681X	M.G.RESISTOR	680	1/16W
R626	NRSA63D-821X	M.G.RESISTOR	820	1/16W
R627	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R628	NRSA63D-561X	M.G.RESISTOR	560	1/16W
R629	NRSA63D-561X	M.G.RESISTOR	560	1/16W
R630	NRSA63D-561X	M.G.RESISTOR	560	1/16W
R631	NRSA63D-561X	M.G.RESISTOR	560	1/16W
R632	NRSA63D-561X	M.G.RESISTOR	560	1/16W
R633	NRSA63D-681X	M.G.RESISTOR	680	1/16W
R634	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R635	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R636	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R637	NRSA63D-821X	M.G.RESISTOR	820	1/16W
R638	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R639	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R640	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R641	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R642	NRSA63D-681X	M.G.RESISTOR	680	1/16W
R643	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R644	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R645	NRSA63D-271X	M.G.RESISTOR	270	1/16W
R646	NRSA63D-563X	M.G.RESISTOR	56k	1/16W
D0.47	NIDGA GOD AGAN	MA O PECICION	400	1/10/1
R647	NRSA63D-124X	M.G.RESISTOR	120k	1/16W
R648	NRSA63D-563X	M.G.RESISTOR	56k	1/16W
R649	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R650	NRSA63D-563X	M.G.RESISTOR	56k	1/16W
R652	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R653	NRSA63D-154X	M.G.RESISTOR	150k	1/16W
R654	NRSA63D-333X	M.G.RESISTOR	33k	1/16W
R655	NRSA63D-393X	M.G.RESISTOR	39k	1/16W
R656	NRSA63D-183X	M.G.RESISTOR	18k	1/16W
R657	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R658	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R659	NRSA63D-102X	M.G.RESISTOR	22k	1/16W
R660	NRSA63D-223X	M.G.RESISTOR	33k	1/16W
R661	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R662	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R663	NRSA63D-103X	M.G.RESISTOR	4.7k	1/16W
R664	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R665	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R666	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R667	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R668	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R669	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R670	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R671	NRSA63D-224X	M.G.RESISTOR	220k	1/16W
R672	NRSA63J-4R7X	M.G.RESISTOR	4.7	1/16W
R673	NRSA63D-123X	M.G.RESISTOR	12k	1/16W
R674	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R675	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R676	NRS12BJ-680X	M.G.RESISTOR	68	1/2W
R677	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
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ymbol No.	Part No.	Part Name	De	scription
R678	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R679	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
R680	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R681	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R682	NRSA63D-121X	M.G.RESISTOR	120	1/16W
	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R683			100k	1/16VV
R684	NRSA63D-104X	M.G.RESISTOR		
R685	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R686 R687	NRSA63D-103X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR	10k 22k	1/16W 1/16W
			0.01	1/16W
R688 R689	NRSA63D-223X NRSA63D-104X	M.G.RESISTOR M.G.RESISTOR	22k 100k	1/16VV
R690	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W
R693	NRSA63D-101X	M.G.RESISTOR	100	1/16VV
R694	NRSA63D-224X	M.G.RESISTOR	220k	1/16VV
R695	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
		M.G.RESISTOR	4.7k	1/16W
R696	NRSA63D-472X	M.G.RESISTOR	680	1/16VV
R697	NRSA63D-681X	M.G.RESISTOR	100k	1/16VV
R698 R699	NRSA63D-104X NRSA63D-333X	M.G.RESISTOR	33k	1/16W
R701	NRSA63D-823X	M.G.RESISTOR	82k	1/16VV
R702	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
R703	NRSA63D-273X	M.G.RESISTOR	27k	1/16W
R704	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R705	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R706	NRSA63D-224X	M.G.RESISTOR	220k	1/16VV
R707	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
		M.G.RESISTOR	680	1/16VV
R801	NRSA63D-681X	M.G.RESISTOR	680	1/16VV
R802 R803	NRSA63D-681X NRSA63D-561X	M.G.RESISTOR	560	1/16 V V
D004		A C DECISTOR	2.21	1/16\A/
R804	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W
R805	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W
R806	NRSA63D-564X	M.G.RESISTOR	560k	1/16W
R807	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R808	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R809	NRSA63D-104X	M.G.RESISTOR	100k	1/16VV
R810	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R811	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
R812 R813	NRSA63D-394X NRSA63D-332X	M.G.RESISTOR M.G.RESISTOR	390k 3.3k	1/16 V V 1/16 V V
			4.01	4 (4 (2) 4)
R814	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R815	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R816	NRSA63J-100X	M.G.RESISTOR	10	1/16V
R817	NRSA63D-103X	M.G.RESISTOR	10k	1/16V
R818	NRSA63D-103X	M.G.RESISTOR	10k	1/16 W
R819	NRSA63D-103X	M.G.RESISTOR	10k	1/16 V
R820	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16V
R821	NRSA63D-102X	M.G.RESISTOR	1k	1/16V\
R822	NRSA63D-223X	M.G.RESISTOR	22k	1/16 V \
R823	NRSA63D-223X	M.G.RESISTOR	22k	1/16 V
R824	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16V\
R825	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16V\
R826	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16₩
R827	NRSA63D-274X	M.G.RESISTOR	270k	1/16 V \
R828	NRSA63D-223X	M.G.RESISTOR	22k	1/16V
R829	NRSA63D-223X	M.G.RESISTOR	22k	1/16 V
R830	NRSA63J-105X	M.G.RESISTOR	1M	1/16V
R831	NRSA63D-103X	M.G.RESISTOR	10k	1/16 V
	NRSA63D-103X	M.G.RESISTOR	22k	1/16V
R832 R833	NRSA63D-223X NRSA63D-223X	M.G.RESISTOR	22k	1/16 V
D024		M.G.RESISTOR	2.2k	1/16 V
R834 R835	NRSA63D-222X NRSA63D-222X	M.G.RESISTOR	2.2k	1/16V
R836	NRSA63D-562X	M.G.RESISTOR	5.6k	1/16V
R837	NRSA63D-274X	M.G.RESISTOR	270k	1/16V
R838	NRSA63D-223X	M.G.RESISTOR	22k	1/16V
		M.G.RESISTOR	22k	1/16V
R839	NRSA63D-223X		1M	1/16 V
R840	NRSA63J-105X	M.G.RESISTOR		1/16V 1/16V
R841	NRSA63D-103X	M.G.RESISTOR	10k	1/16V
R842	NRSA63D-823X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	82k 10k	1/16V 1/16V
R843		1		•
	11D01		0.04	4 14 00 1
R844 R845	NRSA63D-222X NRSA63D-332X	M.G.RESISTOR M.G.RESISTOR	2.2k 3.3k	1/16V 1/16V

[SS/RFP]

ymbol No.	Part No.	Part Name		Description	Symbo No.
R847	NRSA63D-184X	M.G.RESISTOR	180k	1/16W	C101
R848	NRSA63D-473X	M.G.RESISTOR	47k	1/16W	C102
R849	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C103
R850	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C104
R851	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C105
R852	NRSA63D-474X	M.G.RESISTOR	470k	1/16W	C106
R853	NRSA63D-124X	M.G.RESISTOR	120k	1/16W	C108
1000	1110/1000 121/1		1		C109
R854	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	C110
1855	NRSA63D-153X	M.G.RESISTOR	15k	1/16W	C111
1856	NRS144J-1R0X	M.G.RESISTOR	1	1/4W	
1857	NRS144J-2R2X	M.G.RESISTOR	2.2	1/4W	C112
R858	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C113
R859	NRSA63D-121X	M.G.RESISTOR	120	1/16W	C114
R860	NRSA63D-121X	M.G.RESISTOR	120	1/16W	C115
R861	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C116
3901	NRSA63D-682X	M.G.RESISTOR	6.8k	1/16W	C117
1902	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C118
					C123
1903	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C151
906	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C152
907	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	
908	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	C153
909	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C154
910	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C155
1911	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C159
912	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	C160
913	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C161
1914	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C162
					C167
915	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C168
916	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	C169
917	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	
918	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C201
919	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W	C202
920	NRSA63D-224X	M.G.RESISTOR	220k	1/16W	C203
921	NRSA63D-223X	M.G.RESISTOR	22k	1/16W	C204
923	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W	C205
924	NRSA63D-471X	M.G.RESISTOR	470	1/16W	C206
925	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C208
					C209
926	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	C210
927	NRSA63D-223X	M.G.RESISTOR	22k	1/16W	C211
1928	NRSA63D-333X	M.G.RESISTOR	33k	1/16W	
929	NRSA63D-153X	M.G.RESISTOR	15k	1/16W	C212
930	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W	C213
31	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W	C214
932	NRSA63D-471X	M.G.RESISTOR	470	1/16W	C215
933	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C216
1934	NRSA63D-223X	M.G.RESISTOR	22k	1/16W	C217
936	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W	C218
					C223
R937	NRSA63D-471X	M.G.RESISTOR	470	1/16W	C301
1938	NRSA63J-100X	M.G.RESISTOR	10	1/16W	C302
939	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	
					C303
			-6-		C304
/R101	NVP1415-501X	TRIM.RESISTOR	500	RF LEVEL	C305
R102	NVP1415-501X	TRIM.RESISTOR	500	RF LEVEL	C306
/R201	NVP1415-501X	TRIM.RESISTOR	500	RF LEVEL	C307
/R202	NVP1415-501X	TRIM.RESISTOR	500	RF LEVEL	C308
/R305	NVP1415-103X	TRIM.RESISTOR	10k	VCO FRQ.	C309
/R306	NVP1415-103X	TRIM.RESISTOR	10k	LATCH TIMING	C310
/R307	NVP1415-103X	TRIM.RESISTOR	10k	SLICE LEVEL	C311
√R308	NVP1415-103X	TRIM.RESISTOR	10k	ERR TIMING	C312
R309	NVP1415-103X	TRIM.RESISTOR	10k	PR-EQ PH	
/R310	NVP1415-103X	TRIM.RESISTOR	10k	PR-EQ AMP	C313
/Dorr	NIVIDA	TOU A DECICEO	C.	10/0	C314
VR311	NVP1415-202X	TRIM.RESISTOR	2k	LEVEL	C315
VR312	NVP1415-201X	TRIM.RESISTOR	200	DIP	C316
VR405	NVP1415-103X	TRIM.RESISTOR	10k	VCO FRQ.	C317
VR406	NVP1415-103X	TRIM.RESISTOR	10k	LATCH TIMING	C318
VR407	NVP1415-103X	TRIM.RESISTOR	10k	SLICE LEVEL	C319
/R408	NVP1415-103X	TRIM.RESISTOR	10k	ERR TIMING	C320
/R409	NVP1415-103X	TRIM.RESISTOR	10k	PR-EQ PH	C321
VR410	NVP1415-103X	TRIM.RESISTOR	10k	PR-EQ AMP	C322
	NVP1415-202X	TRIM.RESISTOR	2k	LEVEL	
			1000	מוס	
	NVP1415-201X	TRIM.RESISTOR	200	DIP	C323
VR411 VR412	NVP1415-201X	TRIM.RESISTOR	200	DIP	C325 C326

Symbol No.	Part No.	Part Name	Description	
C101 C102 C103 C104 C105 C106 C108 C109 C110 C111	NCB31CK-473X NCB31HK-103X NDC31HJ-390X NCB31CK-473X NCB31CK-104X NCB31CK-104X NDC31HJ-220X NCB31HK-103X NCB31CK-104X NBS1CK-104X NBE41CM-106X	CER.CAPACITOR	0.01 50 39p 50 0.047 16 0.1 16 0.1 16 22p 50 0.01 50	5V DV DV 5V 5V DV DV 5V
C112 C113 C114 C115 C116 C117 C118 C123 C151 C152	NDC31HJ-3R0X NCB31HK-103X NDC31HJ-220X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-473X NCB31HK-103X NCB31HK-103X NCB31HK-103X NCB31HK-103X	CER.CAPACITOR	0.01 50 22p 50 0.1 16 0.1 16 0.1 16 0.047 11 0.047 50 0.01 50	0V 0V 0V 6V 6V 6V 0V 0V
C153 C154 C155 C159 C160 C161 C162 C167 C168 C169	NBE51CM-226X NCB31HK-103X NCB31HK-103X NEH91CM-476X NEH90JM-226X NCB31HK-103X NCB31HK-103X NCB31HK-103X NCB31HK-103X NCB31HK-103X NCB31HK-103X	TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR E.CAPACITOR E.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.01 50 0.01 50 47 16 22 6.3 0.01 50 0.01 50 0.01 55 0.01 55	5V DV DV 5V DV DV 5V DV
C201 C202 C203 C204 C205 C206 C208 C209 C210 C211	NCB31CK-473X NCB31HK-103X NDC31HJ-390X NCB31CK-473X NCB31CK-104X NCB31CK-104X NDC31HJ-220X NCB31HK-103X NCB31CK-104X NBS1CK-104X NBE41CM-106X	CER.CAPACITOR CAPACITOR CAPACITOR CAPACITOR	0.01 50 39p 50 0.047 11 0.1 10 0.1 10 22p 50 0.01 50	6V 0V 6V 6V 6V 6V 0V 6V 6V
C212 C213 C214 C215 C216 C217 C218 C223 C301 C302	NDC31HJ-3R0X NCB31HK-103X NDC31HJ-220X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-473X NCB31HK-103X NCB31HK-103X NCB31HK-103X	CER.CAPACITOR	0.01 51 22p 56 0.1 11 0.1 11 0.1 11 0.047 11 0.047 5 0.01 5	0V 0V 0V 6V 6V 6V 6V 0V 0V
C303 C304 C305 C306 C307 C308 C309 C310 C311 C312	NCB31CK-104X NCB31HK-103X NCB31HK-102X NCB31HK-102X NCB31CK-104X NCB31HK-102X NCB31HK-103X NCB31HK-103X NCB31HK-103X NBE21AM-106X NCB31HK-103X	CER.CAPACITOR	0.01 5 1000p 5 1000p 5 0.1 1 1000p 5 0.01 5 0.01 5 10 1	6V 0V 0V 0V 6V 0V 0V 0V 0V
C313 C314 C315 C316 C317 C318 C319 C320 C321 C322	NCB31CK-104X NCB31HK-103X NDC31HJ-331X NCB31CK-104X NCB31CK-104X NCB31HK-152X NCB31HK-103X NCB31HK-103X NBE21AM-106X NCB31HK-103X	CER.CAPACITOR TAN.CAPACITOR CER.CAPACITOR	0.01 5 330p 5 0.1 1 1 1 0.1 1 1 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	6V 0V 6V 6V 60V 60V 00V
C323 C325 C326	NCB31CK-473X NCB31CK-473X NCB31CK-473X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.047 1	6V 6V

Symbol No.	Part No.	Part Name	Des	cription	Symbol No.	Part No.	Part Name	Des	cription
C327	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C506	NBE41CM-106X	TAN.CAPACITOR	10	16V
C328	NDC31HJ-391X	CER.CAPACITOR	390p	50V	C509	NBE41CM-106X	TAN.CAPACITOR	10	16V
C329	NDC31HJ-471X	CER.CAPACITOR	470p	50V	C510	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C330				50V	C510		CER.CAPACITOR	0.01	50V
	NCB31HK-103X	CER.CAPACITOR	0.01		Coll	NCB31HK-103X	CER.CAPACITOR	0.01	304
C331	NCB31CK-104X	CER.CAPACITOR	0.1	16V					E0) (
C332	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C512	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C333	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C513	NCB31HK-103X	CER.CAPACITOR	0.01	50V
					C516	NDC31HJ-3R0X	CER.CAPACITOR	3p	50V
C334	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C517	NDC31HJ-3R0X	CER.CAPACITOR	3p	50V
C335	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C518	NDC31HJ-3R0X	CER.CAPACITOR	3p	50V
C336	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C519	NDC31HJ-3R0X	CER.CAPACITOR	3p	50V
					C601			0.1	16V
C337	NCB31CK-104X	CER.CAPACITOR	0.1	16V		NCB31CK-104X	CER.CAPACITOR		16V
C338	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C602	NCB31CK-104X	CER.CAPACITOR	0.1	
C340	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C603	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C341	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C604	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C342	NBE41CM-106X	TAN.CAPACITOR	10	16V					
C343	NBE21AM-106X	TAN.CAPACITOR	10	10V	C605	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C344	NCB11AK-225X	CER.CAPACITOR	2.2	10V	C606	NCB31CK-104X	CER.CAPACITOR	0.1	16V
0044	110011711122071	0211.071171011011		.01	C607	NCB31HK-102X	CER.CAPACITOR	1000p	50V
CO 45	NCDONIN 100V	CED CADACITOR	0.04	501/					16V
C345	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C608	NCB31CK-104X	CER.CAPACITOR	0.1	
C347	NBE21AM-106X	TAN.CAPACITOR	10	10V	C609	NCB31HK-102X	CER.CAPACITOR	1000p	50V
C348	NBE21AM-106X	TAN.CAPACITOR	10	10V	C610	NDC31HJ-8R0X	CER.CAPACITOR	8p	50V
C349	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C611	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C350	NBE21AM-106X	TAN.CAPACITOR	10	10V	C612	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C351	NBE41CM-106X	TAN.CAPACITOR	10	16V	C613	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C401	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C614	NCB31CK-104X	CER.CAPACITOR	0.1	16V
					5014	1400010101041	OLII.OAI ACITON	0.1	100
C402	NCB31CK-104X	CER.CAPACITOR	0.1	16V	001-	NODOLOU LOS	CED CADACITOR	0.4	101/
C403	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C615	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C404	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C616	NCB31CK-104X	CER.CAPACITOR	0.1	16V
					C617	NCB31HK-472X	CER.CAPACITOR	4700p	50V
C405	NCB31HK-102X	CER.CAPACITOR	1000p	50V	C618	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C406	NCB31HK-102X	CER.CAPACITOR	1000p	50V	C619	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C407	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C620	NCB31HK-472X	CER.CAPACITOR	4700p	50V
C408								0.1	16V
	NCB31HK-102X	CER.CAPACITOR	1000p	50V	C621	NCB31CK-104X	CER.CAPACITOR		
C409	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C622	NEH91CM-476X	E.CAPACITOR	47	16V
C410	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C623	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C411	NBE21AM-106X	TAN.CAPACITOR	10	10V	C624	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C412	NCB31HK-103X	CER.CAPACITOR	0.01	50V					
C413	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C625	NEH91EM-475X	E.CAPACITOR	4.7	25V
C414	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C626	NCB31CK-104X	CER.CAPACITOR	0.1	16V
0414	INCOST INCTOSX	CEITECALACITOR	0.01	30 4	C627	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C415	NDCOTHLOOTY	CER CARACITOR	220-	501/				0.1	16V
C415	NDC31HJ-331X	CER.CAPACITOR	330p	50V	C629	NCB31CK-104X	CER.CAPACITOR		
C416	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C654	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C417	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C655	NFV41HJ-563X	FILM CAPACITOR	0.056	50V
C418	NCB31HK-152X	CER.CAPACITOR	1500p	50V	C656	NDC31HJ-561X	CER.CAPACITOR	560p	50V
C419	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C657	NFV41HJ-823X	FILM CAPACITOR	0.082	50V
C420	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C658	NCB31HK-392X	CER.CAPACITOR	3900p	50V
C421	NBE21AM-106X	TAN.CAPACITOR	10	10V	C659	NEH91CM-106X	E.CAPACITOR	10	16V
C422	NCB31HK-103X	CER.CAPACITOR	0.01	50V	0000	11211010111110011	2.07.17.10.17.01.1	1,0	
C423		CER.CAPACITOR			C660	NICDOLLIE 100V	CER CARACITOR	0.01	50V
	NCB31CK-473X		0.047	16V		NCB31HK-103X	CER.CAPACITOR		
C425	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C661	NCB31CK-104X	CER.CAPACITOR	0.1	16V
				1	C662	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C426	NCB31CK-473X	CER.CAPACITOR	0.047	16V	C663	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C427	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C664	NCB31HK-102X	CER.CAPACITOR	1000p	5 0 V
C428	NDC31HJ-391X	CER.CAPACITOR	390p	50V	C665	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C429	NDC31HJ-471X	CER.CAPACITOR	470p	50V	C666	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C430	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C667	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C431	NCB31CK-104X	CER.CAPACITOR	0.01	16V	C668	NCB31CK-823X	CER.CAPACITOR	0.082	16V
C431								1	16V
	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C669	NCB11CK-105X	CER.CAPACITOR	'	101
C433	NCB31CK-104X	CER.CAPACITOR	0.1	16V		NORGO	055 0	0.5	
C434	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C670	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C435	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C671	NDC31HJ-470X	CER.CAPACITOR	47p	5 0 V
					C672	NDC31HJ-270X	CER.CAPACITOR	27p	5 0 V
C436	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C673	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C437	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C674	NCB31CK-473X	CER.CAPACITOR	0.047	16V
								0.047	16V
C438	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C675	NCB31CK-473X	CER.CAPACITOR		
C440	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C676	NCB31CK-273X	CER.CAPACITOR	0.027	16V
C441	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C677	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C442	NBE41CM-106X	TAN.CAPACITOR	10	16V	C678	NCB31HK-102X	CER.CAPACITOR	1000p	5 0 V
C443	NBE21AM-106X	TAN.CAPACITOR	10	10V	C679	NCB31CK-104X	CER.CAPACITOR	0.1	1 6 V
C444	NCB11AK-225X	CER.CAPACITOR	2.2	10V					
C445	NCB31HK-103X	CER.CAPACITOR	0.01	50V	C681	NCB11CK-105X	CER.CAPACITOR	1	16V
								1 '	
C447	NBE21AM-106X	TAN.CAPACITOR	10	10V	C685	NCB31EK-223X	CER.CAPACITOR	0.022	25V
				i	C686	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C448	NBE21AM-106X	TAN.CAPACITOR	10	10V	C687	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C449	NCB31CK-104X	CER.CAPACITOR	0.1	16V	C688	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C450	NBE21AM-106X	TAN.CAPACITOR	10	10V	C689	NCB31CK-104X	CER.CAPACITOR	0.1	16V
U+30			10					1000p	50V
CAEA	NBE41CM-106X	TAN.CAPACITOR	4 '	16V	C801	NCB31HK-102X NCB31CK-104X	CER.CAPACITOR	0.1	16V
C451	NCDO4OV 404V					THE PERSON NAMED AND A PARTY OF THE PARTY OF	CER.CAPACITOR	11.1.1	
C451 C501 C505	NCB31CK-104X NCB31HK-103X	CER.CAPACITOR CER.CAPACITOR	0.1	16V 50V	C802 C803	NDC31HJ-470X	CER.CAPACITOR	47p	50V

[SS/RFP]

Symbol No.	Part No.	Part Name	Description	n
C804	NDC31HJ-271X	CER.CAPACITOR	270p	50V
C805 C806 C807 C808	NCB31CK-473X NCB11CK-105X NCB31CK-104X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.047 1 0.1 0.1	16V 16V 16V 16V
C809 C810 C811 C812	NCB10JM-335X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR		6.3V 16V 16V 16V
C813 C814	NBE21EM-105X NCB31HK-102X	TAN.CAPACITOR CER.CAPACITOR	1	25V 50V
C815 C816 C817 C818 C819 C820 C821 C822 C823 C824	NDC31HJ-330X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X NBE21EM-105X NCB31HK-102X NDC31HJ-330X NDC31HJ-101X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.1 0.1 0.1 0.1 1	50V 16V 16V 16V 16V 25V 50V 50V 50V
C825 C826 C827 C828 C829 C830 C831 C832 C833 C834	NDC31HJ-101X NCB31CK-104X NBE41CM-106X NCB31CK-104X NCB31CK-104X NCB31CK-273X NCB31CK-104X NCB31CK-104X NCB31EK-223X NCB31EK-223X NCB31EK-223X	CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	100p 0.1 10 0.1 0.015 0.027 0.1 0.022 0.022 0.022	50V 16V 16V 50V 16V 16V 25V 25V 25V
C835 C836 C837 C838 C839 C840 C841 C842 C843	NCB31CK-104X NEN71HM-224X NEN71HM-224X NEN71HM-224X NCB31CK-104X NEH90JM-336X NEH90JM-336X NEH90JM-336X NEH90JM-336X NEH90JM-336X NCB31CK-104X	CER.CAPACITOR N.P.CAPACITOR N.P.CAPACITOR N.P.CAPACITOR CER.CAPACITOR E.CAPACITOR E.CAPACITOR E.CAPACITOR E.CAPACITOR E.CAPACITOR CER.CAPACITOR	33 33	16V 50V 50V 50V 16V 6.3V 6.3V 6.3V 16V
C847 C849 C851 C852 C854 C855 C856 C857 C901	NCB10JM-335X NCB10JM-335X NEH90JM-107X NCB10JM-335X NEH91CM-476X NCB31CK-104X NEH71EM-476X NEH91EM-336X NEX11DM-476X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR E.CAPACITOR CER.CAPACITOR E.CAPACITOR CER.CAPACITOR E.CAPACITOR E.CAPACITOR E.CAPACITOR E.CAPACITOR CER.CAPACITOR	3.3 100	6.3V 6.3V 6.3V 6.3V 16V 25V 25V 20V 16V
C903 C904 C905 C906 C907 C908 C909 C910 C911 C912	NCB31HK-102X NCB31HK-103X NBE21EM-105X NCB31CK-104X NCB31HK-103X NBE21EM-105X NBE21EM-105X NCB31CK-104X NCB31CK-104X NCR21CK-563X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	1000p 0.01 1 0.1 0.01 1 1 0.1 0.056 0.1	50V 50V 25V 16V 50V 25V 25V 16V 16V
C913 C914 C915 C916 C917 C918 C919	NEX11DM-476X NCB31CK-104X NCB31CK-104X NEX11DM-476X NCB31HK-102X NEX11DM-476X NEX11DM-436X	E.CAPACITOR CER.CAPACITOR CER.CAPACITOR E.CAPACITOR CER.CAPACITOR E.CAPACITOR E.CAPACITOR	47 0.1 0.1 47 1000p 47 33	20V 16V 16V 20V 50V 20V 6.3V
VC301 VC401	NAT3112-200X NAT3112-200X	TRIM.CAPACITOR TRIM.CAPACITOR	20p 20p	DIP DIP

Symbol No.	Part No.	Part Name	Description
L101	NQL024J-R47X	COIL	0.47uH
L102	NQL024J-R47X	COIL	0.47uH
L151	NQL114K-100X	COIL	10uH
L151	NQL114K-100X	COIL	10uH
			10uH
L153	NQL114K-100X	COIL	
L155	NQL24CN-470X	COIL	47uH
L156	NQL114K-100X	COIL	10uH
L201	NQL024J-R47X	COIL	0.47uH
L202	NQL024J-R47X	COIL	0.47uH
L601	NQR0181-001X	COIL	000uH
L602	NQL124J-100X	COIL	10uH
L801	NQL12BJ-101X	COIL	100uH
L802	NQL12BJ-101X	COIL	100uH
	NQL12BJ-101X	COIL	100uH
L803			100uH
L804	NQL12BJ-101X	COIL	
L805	NQL12BJ-101X	COIL	100uH
L806	NQL12BJ-101X	COIL	100uH
L807	NQL114K-100X	COIL	10uH
L808	NQL114K-100X	COIL	10uH
L809	NQL12BK-470X	COIL	47uH
1.001	NQL24CN-470X	COIL	47uH
L901	NQL24CN-470X	COIL	47uH
L902			
L903	NQL25CM-470X	COIL	47uH
L904	SSV2810-330V	COIL	33uH
L905	NQL12BJ-101X	COIL	100uH
	007040707	LOFILTED	
LC801	PGZ01972Z	LC FILTER	
X601	NAX0065-002X	CRYSTAL	12MHz
,,,,,,			
TH301	NAD0002-103X	THERMISTOR	10k
TH302	NAD0002-103X	THERMISTOR	10k
TH401	NAD0002-103X	THERMISTOR	10k
			1
TH402	NAD0002-103X	THERMISTOR	10k
S601	NSW0018-001X	SLIDE SWITCH	
2001	149440018-0018	SLIDE SWITCH	
CNIIO	OCA 1201C2 00Y	CONNECTOR	9PIN
CN13	QGA1201C2-09X		
CN41	QGA1201C2-09X	CONNECTOR	9PIN
CN42	QGA1201C2-03X	CONNECTOR	3PIN
CN46	SCV2850-040X	CONNECTOR	40PIN
CN47	SCV2850-040X	CONNECTOR	40PIN
CN48	QGA1501C2-02W	CONNECTOR	2PIN
CN49	QGA1201C2-05X	CONNECTOR	5PIN
CN50	QGA1201C2-09X	CONNECTOR	2-PIN
CN51	OGA1201C2-02X	CONNECTOR	2PIN
CN52	QGF1012F1-11X	CONNECTOR	11PIN
		CONNECTOR	10DIN
CN53	QGF1012F1-10X	CONNECTOR	10PIN
CN54	SSV2615-14	CONNECTOR	14PIN
CN55	PGZ01932-012Z	CONNECTOR	12PIN
TD101	NN70000 001V	TEST POINT	TP101-601
TP101	NNZ0009-001X	1EST POINT	115,101,4001
FL301	PGZ02180-W	FL FILTER	FL301,401
K101	PGZ00627Z	FERRATE BEADS	K101-103
K151	PGZ00354	FERRATE BEADS	K151,804,901
K201	PGZ00627Z	FERRATE BEADS	K201-802
T101	PGZ02198-02Z	COIL	
T151	PGZ02198-02Z	COIL	
T201	PGZ02198-02Z	COIL	
TD:	LINE OCCUPANT	EADTH TED MAIN	TD1 2
TB1	NNZ0006-001X	EARTH TERMINAL	TB1,2
	1	1	

6.8 AUDIO&LCD BOARD ASSEMBLY PARTS LIST 08 SCK2539-01-N0A/SCK2587-01-U0A(U)

SCK2539-01-F0A(F)

	(2539-01-E0A(E)		08
Symbol No.	Part No.	Part Name	Description
IC1 IC2 IC3 IC4 IC5 IC6 IC7 IC8 IC9 IC10	TC4053BFT-X TC4053BFT-X LM837M-X LM837M-X TC4053BFT-X TC4053BFT-X TC453BFT-X TC4S81F-X M5218AFP-X M5218AFP-X	I.C.(M)	TOSHIBA TOSHIBA NATIONAL SEMICO NATIONAL SEMICO TOSHIBA TOSHIBA TOSHIBA TOSHIBA MITSUBISHI MITSUBISHI
IC11 IC12 IC13 IC14 IC15 IC16 IC17 IC18 IC19	M5282FP-X M5282FP-X TC4W53FU-X TC4W53FU-X M5218AFP-X M5218AFP-X LM837M-X LM837M-X LM837M-X M5218AFP-X M5218AFP-X	I.C.(M)	MITSUBISHI MITSUBISHI TOSHIBA TOSHIBA MITSUBISHI MITSUBISHI NATIONAL SEMICO NATIONAL SEMICO MITSUBISHI MITSUBISHI
IC21 IC25 IC26 IC27 IC28 IC301 IC302 IC303 IC304 IC305	AN77L05M-X TC4S81F-X TC4S81F-X TC4S81F-X TC4S81F-X TC4W53FU-X TC4W53FU-X M5282FP-X M5282FP-X M5218AFP-X	I.C.(M)	MATSUSHITA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA MITSUBISHI MITSUBISHI
IC306 IC307 IC308 IC309 IC310 IC313 IC314 IC315 IC401	M5218AFP-X TC4W53FU-X TC4W53FU-X LM837M-X LM837M-X M5218AFP-X M5218AFP-X AN77L05M-X PLSC1237 PLSC1262	I.C.(M)	MITSUBISHI TOSHIBA TOSHIBA NATIONAL SEMICO NATIONAL SEMICO MITSUBISHI MITSUBISHI MATSUSHITA UPD78P054GC-3B9 (E) UPD78P054GC-3B9 (U)
IC403 IC404 IC405 IC406 IC408 IC409 IC411 IC412 IC413 IC414	TC7SU04FU-X TC4053BFT-X NJM4556AM-X MSM6338MS-K-X TC7W126FU-X TC7566FU-X TC74VHC123AFT-X TC7W74FU-X TC7SH08FU-X NJM319M-X	I.C.(M)	TOSHIBA TOSHIBA JRC OKI TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA TOSHIBA JRC
IC416 IC421 IC422 IC423 IC424 IC425 IC701 IC711 IC731 IC732	M5218AFP-X S-80840ANNP-W S-8423LFS-X AN77L05M-X BU4094BCFV-X S-80840ANNP-W NJM062M-X M5218AFP-X M5201FP-X M5201FP-X	I.C.(M)	MITSUBISHI SEIKO SEIKO MATSUSHITA ROHM SEIKO JRC MITSUBISHI MITSUBISHI MITSUBISHI
IC733 IC734 IC772 IC901 IC902 IC903 IC904 IC905 IC906 IC907	M5218AFP-X M5218AFP-X BU4094BCFV-X BA7795FS-X BA7795FS-X TC4053BFT-X TC4053BFT-X M5218AFP-X M5218AFP-X TC4569F-X	I.C.(M)	MITSUBISHI MITSUBISHI ROHM ROHM TOSHIBA TOSHIBA MITSUBISHI MITSUBISHI TOSHIBA
Q1 Q2	2SD2240/RST/-X 2SD2240/RST/-X	TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA

Note: The AUDIO & LCD board assembly will be changed from SCK2539-01-N0A to SCK2587-01-U0A for future production and they do have interchangeability.

	interchangeability.		
Symbol No.	Part No.	Part Name	Description
Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10	2SB1463/RST/-X 2SB1463/RST/-X 2SD2240/RST/-X 2SD2240/RST/-X 2SD2240/RST/-X 2SD2240/RST/-X DTC124EUA-X DTC124EUA-X	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA ROHM ROHM
Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q21 Q22	DTA124EUA-X DTA124EUA-X DTC124EUA-X DTC124EUA-X DTA124EUA-X DTA124EUA-X 2SK1062-X 2SK1062-X DTC124TUA-X DTC124TUA-X	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR FET FET TRANSISTOR TRANSISTOR	ROHM ROHM ROHM ROHM ROHM TOSHIBA TOSHIBA ROHM ROHM
O23 O24 O25 O26 O27 O28 O29 O30 O43 O44	DTC124EUA-X DTC124EUA-X DTA124EUA-X DTA124EUA-X DTC124EUA-X DTC124EUA-X DTC124EUA-X DTC124EUA-X FMW3-X FMW3-X	TRANSISTOR	ROHM ROHM ROHM ROHM ROHM ROHM ROHM ROHM
Q47 Q48 Q57 Q58 Q59 Q60 Q61 Q62 Q63 Q64	DTA114TKA-X DTA114TKA-X DTA124EUA-X DTA124EUA-X 2SD1820/OR/-X 2SD1820/OR/-X DTC124TUA-X DTC124TUA-X DTC124EUA-X DTC124EUA-X	TRANSISTOR	ROHM ROHM ROHM ROHM MATSUSHITA MATSUSHITA ROHM ROHM ROHM ROHM
Q65 Q66 Q101 Q102 Q103 Q104 Q105 Q106 Q107 Q108	2SB1219/QR/-X 2SB1219/QR/-X 2SC4081/QRS/-X 2SC4081/QRS/-X DTA124EUA-X DTA124EUA-X 2SC4081/QRS/-X 2SC4081/QRS/-X 2SC4081/QRS/-X 2SC4081/QRS/-X	TRANSISTOR	MATSUSHITA MATSUSHITA ROHM ROHM ROHM ROHM ROHM ROHM ROHM ROHM
Q109 Q110 Q111 Q112 Q113 Q114 Q115 Q116 Q117 Q118	DTC144EUA-X DTC144EUA-X DTC144EUA-X DTC144EUA-X 2SC4081/QRS/-X 2SC4081/QRS/-X 2SA1577/QR/-X 2SA1577/QR/-X 2SC4081/QRS/-X 2SC4081/QRS/-X	TRANSISTOR	ROHM ROHM ROHM ROHM ROHM ROHM ROHM ROHM
Q119 Q120 Q121 Q122 Q123 Q124 Q125 Q126 Q301 Q302	2SA1577/QR/-X 2SA1577/QR/-X DTC323TK-X DTC323TK-X DTA124EUA-X DTA124EUA-X DTC124EUA-X DTC124EUA-X 2SC4081/QRS/-X 2SC4081/QRS/-X	TRANSISTOR	ROHM ROHM ROHM ROHM ROHM ROHM ROHM ROHM
Q303 Q304 Q305 Q306 Q307	DTA124EUA-X DTA124EUA-X 2SC4081/QRS/-X 2SC4081/QRS/-X 2SC4081/QRS/-X	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	ROHM ROHM ROHM ROHM ROHM

[AUDIO&LCD]

Decomposition Decompositio	Symbol No.	Part No.	Part Name	Description	Symbol No.	Part No.	Part Name	Descrip	tion
DOTCL44ELJA X TRANSISTOR ROHM D059 D0714ELJA X TRANSISTOR ROHM D059 D050 ROHM D050 ROHM D050 ROHM	USUS	2SC4081/ORS/-X	TRANSISTOR	ROHM	D353	DAP202U-X	DIODE	ROHM	
DITCLIFELIALY TRANSFORD ROHM DIGGS DADZQULX DIGGS ROHM DIGGS R									
DICLIMELIAN TRANSISTOR ROHM D449 DAGGALY D100E ROHM D449 DAGGALY D449 D									
OCT OCT OCT OCT OC									
DOTS									
32312 32CAGBRUGNESK TARKSTOR ROHM D490 DAZQRAW D100E ROHM D490 DAZQRAW D100E D10M D10M D20M	Q312	DTC144EUA-X	TRANSISTOR	IROHM	1				
SCADERIORISMS TRANSISTOR ROHM D409 DAJOSHUX D100E ROHM D410 DAJOSHUX D410E D	Q313	2SC4081/QRS/-X	TRANSISTOR	ROHM	D407	DA204U-X			
SASSESSION SASSISTOR SAS				ROHM	D409	DA204U-X	DIODE		
2541677/GRMX					D410	DA204U-X	DIODE	ROHM	
250406/10/15/25/25 TRANSISTOR ROHM D412 D					D411		ZENER DIODE	MATSUSHITA	
GS18 GS26 GS170R1X TRANSISTOR FIGHM D170 D4722LX D100E ROHM D170 D4727LRX D100E D100E					1				
Q3310 Q341577/QRIVX TRANSISTOR ROHM D702 DANZQZU X D100E ROHM D703 DANZQZU X D100E ROHM D702 DANZQZU X D100E ROHM D703 D100E D100E					D/12	MV3034-X	ZENER DIODE	MATSUSHITA	
20220 25A1577/0RPAX TRANSISTOR ROHM D702 DAX202U-X D10DE ROHM D703									
07222TRX TRANSISTOR ROHM D731 DAX202UX D100E ROHM D731 D732 D732TRX TRANSISTOR ROHM D731 D731 D732 D732TRX TRANSISTOR ROHM D731 D731 D732 D732 D732TRX TRANSISTOR ROHM D731 D731 D732 D732TRX TRANSISTOR ROHM D731 D731 D732 D732TRX TRANSISTOR ROHM D731 D732 D732TRX TRANSISTOR ROHM D731 D732 D732TRX TRANSISTOR ROHM D731 D732TRX									
O322 DT323TLX									
10.032 0.71214ELJAX TRANSISTOR ROHM D001 MA3092/JX D002 Q321	DTC323TK-X	TRANSISTOR							
Description	Q322	DTC323TK-X	TRANSISTOR	ROHM					
10232 DTC124EUAX TRANSISTOR ROHM R					D751	MA736-X		MATSUSHITA	
0.0321 0.07124EUAX TRANSSTOR ROHM	0323	DTA124FUA-X	TRANSISTOR	IROHM I	D901	MA3082/L/-X	CHIP DIODE	MATSUSHITA	
0.025									
Dazze DTC124EUAX TRANSISTOR ROHM R									
0.232 DTC124EUAX TRANSISTOR ROHM R					10401	CLEHDEO	li e n		
DOCK Transistor Transistor Rohm Ro					LD401	GESHDOO	L.E.D.		
DAGE DECIZIAGUAX TRANSISTOR ROHM ROHM ROME ROHM ROME R									
Quad DTC124EUAX	Q332	DTC124EUA-X	TRANSISTOR						4 44 03 4 4
Q-020 DTC124EUAX	Q401	DTC124EUA-X	TRANSISTOR		R1				
O731 DTC124EUAX TRANSISTOR ROHM RESISTOR 2.2k 1/10W ROHM ROMA ROHM ROHM					R2	NRSA02J-222X			
O731 DTC124EUAX TRANSISTOR ROHM R4 NRSA023-222X M. G.RESISTOR 2.2k 1/10W ROM RESISTOR 2.2k 1/10W ROM ROM ROM RESISTOR 2.2k 1/10W ROM ROM ROM ROM ROM RESISTOR 2.2k 1/10W ROM ROM ROM ROM ROM ROM RESISTOR 2.2k 1/10W ROM ROM ROM ROM ROM RESISTOR 2.2k 1/10W ROM								2.2k	1/10W
Display									
O733 SHAW3-X TRANSISTOR ROHM ROWN RASISTOR C2-X 1/10W O733 SELEGRAPHY-X TRANSISTOR TOSHIBA ROWN RASISTOR C2-X 1/10W C777 DTC124TUA-X TRANSISTOR TOSHIBA ROWN ROWN	U/31	DICIZ4EUA-X	MANSISTON	IN ONIVI					
0735 2262737W,				20114					
O779 DTC124TUAX TRANSISTOR ROHM ROHM								2.2K	
O771 DTC124TUAX TRANSISTOR ROHM ROME ROHM ROHM ROHM ROHM ROHM ROHM ROHM ROHM ROME ROHM RO	Q733	2SB1463/RST/-X	TRANSISTOR						
D772 DTC124TUA.X TRANSISTOR ROHM R10 RRSA02J-242X M.G.RESISTOR 2.4k 1/10W	0751	2SC2873/Y/-X	TRANSISTOR	TOSHIBA	R8	NRSA02J-222X	M.G.RESISTOR		
Display				ROHM	R9	NRSA02J-242X	M.G.RESISTOR	2.4k	1/10W
DTC124ELIAX TRANSISTOR ROHM RI1 NRSA02L242X M.G. RESISTOR 2.4k 1/10W									1/10W
DOBO DTC124EUAX TRANSISTOR ROHM RI12 NRSA02J-242X M. G. RESISTOR 2.4k 1/10W M. G. RESISTOR 2.4k 1/16W				1110	THIOMOZD ZHZA	W.G. ILDIO I OI		,,	
DOTITION				544	NDCA001040V	MAIC DECICTOR	2.41	1/10\\	
DOTE Company Company		DTC124EUA-X			1				
Composition	Q903	DTC124EUA-X	TRANSISTOR						
Q906 ZSC4081/QRS/X TRANSISTOR ROHM R14 R154 RNSA63D-243X M. G.RESISTOR 24k 1/16W R154 R154	Q904	DTC124EUA-X	TRANSISTOR	ROHM	R13	NRSA63D-243X			
SCAGBI/CIRS/X TRANSISTOR ROHM RIFE ROSAGSD-243X M. G.RESISTOR 24k 1/16W			TRANSISTOR	ROHM I	R14	NRSA63D-243X	M.G.RESISTOR	24k	1/16W
OSPORT CASCRIFICATION CASCRIF 4000	255 155 17 41 157 11			R15	NRSA63D-243X	M.G.RESISTOR	24k	1/16W	
OST OST-0879/N	0006	2004001/ODC/V	TRANSISTOR	ROHM					1/16W
C912 25C2973/Y/X TRANSISTOR TOSHIBA ROHM ROHM ROHM ROHM ROSHIBA ROHM ROSHIBA ROHM ROHM ROSHIBA ROHM ROHM ROSHIBA R									
OPI10 DTA124EUA.X TRANSISTOR ROHM R20 NRSA63D-274X M. G. RESISTOR 270k 1/16W 1/16W 0PI10 2SK1062-X FET TOSHIBA R20 NRSA63D-274X M. G. RESISTOR 270k 1/16W 1/16W 1/16W NRSA63D-274X M. G. RESISTOR 270k 1/16W NRSA63D-274X M. G. RESISTOR 47k 1/16W NRSA63D-274X M. G. RESISTOR 47k 1/16W NRSA63D-473X M. G. RESISTOR 47k 1/16W NRSA63D-4									
D314 DT1214EUA-X TRANSISTOR ROHM R20 NRSA63D-274X M.G.RESISTOR 270k 1/16W									
OB16 ZSK1062-X	Q913	DTA124EUA-X	TRANSISTOR						
Q915 25K1062-X	Q914	DTC124EUA-X	TRANSISTOR	ROHM	R20	NRSA63D-274X	M.G.RESISTOR	270k	1/16VV
DA204U-X DIODE			FFT	TOSHIBA					
D1	40.0	ZON TOOL X	1		R21	NRSA63D-274X	M.G.RESISTOR	270k	1/16W
D1								270k	1/16W
DA204U-X	D1	DAGGALLY	DIODE	POHM					
DA204U-X									
DA204U-X DIODE									
Day									
D6 DA204U-X DIODE	D4	DA204U-X	DIODE	ROHM					
D7 DA204U-X DIODE	D5	DA204U-X	DIODE	ROHM	R27	NRSA63J-105X	M.G.RESISTOR		
DAZOAU-X DIODE ROHM RO	D6	DA204U-X	DIODE	ROHM	R28	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
DB DA20AUX DIODE ROHM R30 NRSA63D-472X M.G.RESISTOR 4.7k 1/16W								4.7k	1/16W
D11									
D12 MA116-X CHIP DIODE MATSUSHITA R33 NRSA63D-472X M.G.RESISTOR 4.7k 1/16W R34 NRSA63D-472X N.G.RESISTOR 4.7k 1/16W R34 NRSA63D-471X N.G.RESISTOR 4.7k 1/16W R35 NRSA63D-471X N.G.RESISTOR 4.7k 1/16W R36 NRSA63D-471X N.G.RESISTOR 4.7k 1/16W R36 NRSA63D-471X N.G.RESISTOR 4.7c 1/16W R37 NRSA63D-471X N.G.RESISTOR 4.7c 1/16W R38 NRSA63D-471X N.G.RESISTOR 4.7c 1/16W R39 NRSA63D-471X N.G.RESISTOR 4.7c 1/16W R39 NRSA63D-471X N.G.RESISTOR 4.7c 1/16W R39 NRSA63D-361X N.G.RESISTOR 360 1/16W NRSA63D-361X N.G.RESISTOR 3.6c 1/16W NRSA63D-222X N.G.RESISTOR 3.6c 1/16W NRSA63D-361X N.G.RESISTOR 3.6c 1/16W NRSA63D-361X N.G.RESISTOR 3.6c 1/16W NRSA63D-361X N.G.RESISTOR 3.6c 1/16W 3.6c				1	1,21				
D12					Pag	NRSAGED 472V	M G RESISTOR	4 7k	1/16W
D13	D12	IVIA I 16-X	CUIL DIODE	IVIAI SUSTIIA					
D14	1								
D17 DAP202U-X DIODE ROHM R37 NRSA63D-471X M.G.RESISTOR 470 1/16W 1/16W D18 DAP202U-X DIODE ROHM R38 NRSA63D-471X M.G.RESISTOR 470 1/16W D19 MA116-X CHIP DIODE MATSUSHITA R39 NRSA63D-361X M.G.RESISTOR 360 1/16W D20 MA116-X CHIP DIODE MATSUSHITA R41 NRSA63D-361X M.G.RESISTOR 360 1/16W D22 MA116-X CHIP DIODE MATSUSHITA R41 NRSA63D-361X M.G.RESISTOR 360 1/16W D22 DAP202U-X DIODE ROHM R42 NRSA63D-361X M.G.RESISTOR 360 1/16W D342 MA116-X CHIP DIODE MATSUSHITA R44 NRSA63D-361X M.G.RESISTOR 360 1/16W D342 MA116-X CHIP DIODE MATSUSHITA R45 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D343 MA116-X CHIP DIODE MATSUSHITA R46 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D344 MA116-X CHIP DIODE MATSUSHITA R46 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D344 DAP202U-X DIODE MATSUSHITA R47 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D347 DAP202U-X DIODE MATSUSHITA R48 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D348 DAP202U-X DIODE ROHM R49 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D349 MA116-X CHIP DIODE MATSUSHITA R55 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D349 MA116-X CHIP DIODE MATSUSHITA R55 NRSA63D-103X M.G.RESISTOR 1.2k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R56 NRSA63D-103X M.G.RESISTOR 10k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R56 NRSA63D-103X M.G.RESISTOR 10k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-103X M.G.RESISTOR 100k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W D350 MA116-X CHIP DIO	1								
D17	D14	MA116-X	CHIP DIODE	MATSUSHITA	R36				
D18					R37	NRSA63D-471X	M.G.RESISTOR		
D19							M.G.RESISTOR	470	1/16W
D20									
D21 MA116-X CHIP DIODE MATSUSHITA R41 NRSA63D-361X M.G.RESISTOR 360 1/16W									
D22 MA116-X CHIP DIODE MATSUSHITA R42 NRSA63D-361X M.G.RESISTOR 360 1/16W D23 DAP202U-X DIODE ROHM R43 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D341 MA116-X CHIP DIODE MATSUSHITA R44 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D342 MA116-X CHIP DIODE MATSUSHITA R46 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D343 MA116-X CHIP DIODE MATSUSHITA R46 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D344 MA116-X CHIP DIODE MATSUSHITA R47 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D347 DAP202U-X DIODE ROHM R49 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D348 DAP202U-X DIODE ROHM R50 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D349 MA116-X CHIP DIODE									
D22									
D23	D22	MA116-X	CHIP DIODE	MATSUSHITA	R42	NRSA63D-361X	M.G.RESISTOR	360	1/16//
D24 DAP202U-X DIODE ROHM R43 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D341 MA116-X CHIP DIODE MATSUSHITA R44 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D342 MA116-X CHIP DIODE MATSUSHITA R45 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D343 MA116-X CHIP DIODE MATSUSHITA R46 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D344 MA116-X CHIP DIODE MATSUSHITA R48 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D347 DAP202U-X DIODE ROHM R49 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D348 DAP202U-X DIODE ROHM R50 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D349 MA116-X CHIP DIODE MATSUSHITA R55 NRSA63D-103X M.G.RESISTOR 10k 1/16W D351 MA116-X CHIP DIODE									
R44 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W					R43	NRSA63D-222X	M.G.RESISTOR	2.2k	1/16W
D341 MA116-X CHIP DIODE MATSUSHITA R45 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D342 MA116-X CHIP DIODE MATSUSHITA R46 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D343 MA116-X CHIP DIODE MATSUSHITA R47 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D344 DAP202U-X DIODE ROHM R49 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D348 DAP202U-X DIODE ROHM R49 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D349 MA116-X CHIP DIODE MATSUSHITA R50 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R55 NRSA63D-103X M.G.RESISTOR 10k 1/16W D351 MA116-X CHIP DIODE MATSUSHITA R56 NRSA63D-103X M.G.RESISTOR 10k 1/16W D352 MA116-X CHIP DIODE </td <td> 527</td> <td>2020-7</td> <td>DIODE</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	527	2020-7	DIODE						
D342 MA116-X CHIP DIODE MATSUSHITA R46 NRSA63D-222X M.G.RESISTOR 2.2k 1/16W D343 MA116-X CHIP DIODE MATSUSHITA R47 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D344 MA116-X CHIP DIODE MATSUSHITA R48 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D347 DAP202U-X DIODE ROHM R49 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D348 DAP202U-X DIODE ROHM R50 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D349 MA116-X CHIP DIODE MATSUSHITA R55 NRSA63D-103X M.G.RESISTOR 10k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA R56 NRSA63D-103X M.G.RESISTOR 10k 1/16W D351 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W	D244	MATION	CUID DIODE	MATCHICHITA					
D342									
D344 MA116-X									
D344 MA116-X	D343	MA116-X	CHIP DIODE	MATSUSHITA					
D347 DAP202U-X DIODE ROHM R49 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D348 DAP202U-X DIODE ROHM R50 NRSA63D-122X M.G.RESISTOR 1.2k 1/16W D349 MA116-X CHIP DIODE MATSUSHITA R55 NRSA63D-103X M.G.RESISTOR 10k 1/16W D350 MA116-X CHIP DIODE MATSUSHITA NRSA63D-103X M.G.RESISTOR 10k 1/16W D351 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W					R48	NRSA63D-122X	M.G.RESISTOR	1.2k	
D348									1/16W
D349 MA116-X CHIP DIODE MATSUSHITA R55 NRSA63D-103X M.G.RESISTOR 10k 1/16W									
D350 MA116-X CHIP DIODE MATSUSHITA R56 NRSA63D-103X M.G.RESISTOR 10k 1/16W									
D351 MA116-X CHIP DIODE MATSUSHITA D352 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W									
D352 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W					R56	NHSA63D-103X	M.G.RESISTOR	TUK	1/1000
D352 MA116-X CHIP DIODE MATSUSHITA R57 NRSA63D-104X M.G.RESISTOR 100k 1/16W	D351	MA116-X	CHIP DIODE	MATSUSHITA					
					R57	NRSA63D-104X	M.G.RESISTOR	100k	
	1	1					M.G.RESISTOR	100k	1/16W
					I L				

Symbol No.	Part No.	Part Name	Description
R63 R64 R65 R66 R67 R68 R71 R72	NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63J-0R0X NRSA63D-471X NRSA63D-471X NRSA63D-101X NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	0 1/16W 0 1/16W 0 1/16W 0 1/16W 470 1/16W 470 1/16W 100 1/16W 100 1/16W
R75 R76 R77 R78 R79 R80 R81 R82 R83 R84	NRSA63D-332X NRSA63D-332X NRSA63D-332X NRSA63D-332X NRSA63D-153X NRSA63D-153X NRSA63D-153X NRSA63D-153X NRSA63D-153X NRSA63D-153X NRSA63D-153X	M.G.RESISTOR	3.3k 1/16W 3.3k 1/16W 3.3k 1/16W 3.3k 1/16W 15k 1/16W 15k 1/16W 15k 1/16W 15k 1/16W 15k 1/16W 15k 1/16W
R85 R86 R89 R90 R91 R92 R93 R94 R95	NRSA63D-153X NRSA63D-153X NRSA63D-104X NRSA63D-104X NRSA63D-104X NRSA63D-104X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-202X NRSA63D-202X	M.G.RESISTOR	15k 1/16W 15k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 10k 1/16W 10k 1/16W 2k 1/16W 2k 1/16W
R97 R98 R101 R102 R103 R104 R107 R108 R109 R110	NRSA63D-511X NRSA63D-511X NRSA63D-104X NRSA63D-104X NRSA63D-104X NRSA63D-104X NRSA63D-104X NRSA63D-104X NRSA63D-103X NRSA63D-103X	M.G.RESISTOR	510 1/16W 510 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W 100k 1/16W
R111 R112 R113 R114 R115 R116 R117 R118 R119 R120	NRSA63D-154X NRSA63D-154X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X	M.G.RESISTOR	150k 1/16W 1/16W 10k 1/16W
R121 R122 R123 R124 R125 R126 R127 R128 R129 R130	NRSA63D-103X NRSA63D-103X NRSA63D-333X NRSA63D-333X NRSA63D-223X NRSA63D-223X NRSA63D-473X NRSA63D-473X NRSA63D-104X NRSA63D-104X	M.G.RESISTOR	10k 1/16W 10k 1/16W 33k 1/16W 33k 1/16W 22k 1/16W 22k 1/16W 47k 1/16W 47k 1/16W 100k 1/16W
R131 R132 R133 R134 R135 R136 R137 R138 R139 R140	NRSA63D-473X NRSA63D-473X NRSA63D-473X NRSA63D-473X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-153X NRSA63D-153X	M.G.RESISTOR	47k 1/16W 47k 1/16W 47k 1/16W 47k 1/16W 10k 1/16W 10k 1/16W 10k 1/16W 10k 1/16W 10k 1/16W 15k 1/16W 15k 1/16W
R141 R142 R143 R144 R145	NRSA63D-223X NRSA63D-223X NRSA63D-103X NRSA63D-103X NRSA63D-333X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	22k 1/16W 22k 1/16W 10k 1/16W 10k 1/16W 33k 1/16W

Symbol No.	Part No.	Part Name	Des	scription
R146	NRSA63D-333X	M.G.RESISTOR	33k	1/16W
R147	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 10k	1/16VV 1/16VV
R148 R149	NRSA63D-103X	M.G.RESISTOR	4.7k	1/16W
R150	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R151	NRSA63D-273X	M.G.RESISTOR	27k	1/16W
R152 R153	NRSA63D-273X NRSA63D-242X	M.G.RESISTOR M.G.RESISTOR	27k 2.4k	1/16VV 1/16VV
R154	NRSA63D-242X	M.G.RESISTOR	2.4k	1/16W
R155	NRSA63D-393X	M.G.RESISTOR	39k	1/16W
R156 R159	NRSA63D-393X NRSA63D-332X	M.G.RESISTOR M.G.RESISTOR	39k 3.3k	1/16VV 1/16VV
R160	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W
R161 R162	NRSA63D-472X NRSA63D-472X	M.G.RESISTOR M.G.RESISTOR	4.7k 4.7k	1/16W 1/16W
R163	NRSA63D-331X	M.G.RESISTOR	330	1/16W
R164	NRSA63D-331X	M.G.RESISTOR	330	1/16W
R165	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R166 R167	NRSA63D-103X NRSA63D-331X	M.G.RESISTOR M.G.RESISTOR	10k 330	1/16W 1/16W
R168	NRSA63D-331X	M.G.RESISTOR	330	1/16W
R169	NRSA63D-103X	M.G.RESISTOR	10k 10k	1/16W 1/16W
R170 R171	NRSA63D-103X NRSA63D-104X	M.G.RESISTOR M.G.RESISTOR	100k	1/16VV
R172	NRSA63D-104X	M.G.RESISTOR	100k	1/16VV
R173	NRSA63D-470X	M.G.RESISTOR	47	1/16W
R174 R175	NRSA63D-470X NRSA63D-334X	M.G.RESISTOR M.G.RESISTOR	47 330k	1/16W 1/16W
R176	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R177	NRSA63D-244X	M.G.RESISTOR	240k	1/16W 1/16W
R178 R179	NRSA63D-244X NRSA63D-334X	M.G.RESISTOR M.G.RESISTOR	240k 330k	1/16W
R180	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R181 R182	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 10k	1/16VV 1/16VV
R183	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R184	NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 330k	1/16W 1/16W
R185 R186	NRSA63D-334X NRSA63D-334X	M.G.RESISTOR	330k	1/16 VV
R187	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R188 R189	NRSA63D-473X NRSA63D-472X	M.G.RESISTOR M.G.RESISTOR	47k 4.7k	1/16 W 1/16 W
R190	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16VV
R191 R192	NRSA63D-102X NRSA63D-102X	M.G.RESISTOR M.G.RESISTOR	1k 1k	1/16W 1/16W
R193	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16VV
R194	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16VV
R195	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R196 R197	NRSA63D-472X NRSA63D-472X	M.G.RESISTOR M.G.RESISTOR	4.7k 4.7k	1/16W 1/16W
R198	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R201 R202	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 10k	1/16W 1/16W
R203	NRSA63D-103X	M.G.RESISTOR	10k	1/16 V
R204	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R205	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R206 R207	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 10k	1/16 W 1/16 W
R208	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R211	NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 10k	1/16 W 1/16 W
R212 R213	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR	10k	1/16 V V
R214	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R233 R234	NRSA63D-183X NRSA63D-183X	M.G.RESISTOR M.G.RESISTOR	18k 18k	1/16 W 1/16 W
R235	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16 W
R236	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W
R237 R238	NRSA63J-105X NRSA63J-105X	M.G.RESISTOR M.G.RESISTOR	1M 1M	1/16 W 1/16 W
R241	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R242 R247	NRSA63D-472X NRSA63D-183X	M.G.RESISTOR M.G.RESISTOR	4.7k 18k	1/16 W 1/16 W
R247	NRSA63D-183X	M.G.RESISTOR	18k	1/16W

[AUDIO&LCD]

Symbol No.	Part No.	Part Name	D	escription	Symbol No.	Part No.	Part Name	1	Description
R249	NRSA63D-202X	M.G.RESISTOR	2k	1/16W	R341	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R250	NRSA63D-202X	M.G.RESISTOR	2k	1/16W	R342	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
11230		,	1	.,	R343	NRSA63D-470X	M.G.RESISTOR	47	1/16W
R251	NRSA63J-105X	M.G.RESISTOR	1M	1/16W	R344	NRSA63D-470X	M.G.RESISTOR	47	1/16W
R251	NRSA63J-105X NRSA63J-105X	M.G.RESISTOR	1M	1/16W	R345	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R261	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R346	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R262	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R347	NRSA63D-244X	M.G.RESISTOR	240k	1/16W
R263	NRSA63D-202X	M.G.RESISTOR	2k	1/16W	R348	NRSA63D-244X	M.G.RESISTOR	240k	1/16W
R264	NRSA63D-202X	M.G.RESISTOR	2k	1/16W	R349	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
	NRSA63D-202X	M.G.RESISTOR	100k	1/16W	R350	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R265		M.G.RESISTOR	100k	1/16W	1,000	111071000 00 171			
R266	NRSA63D-104X	M.G.RESISTOR	4.7k	1/16W	R351	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R267	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W	R352	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R268	NRSA63D-472X	IVI.G.NESISTON	4.78	1/1000	R353	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
Daco	NIDCA COD 101V	M.G.RESISTOR	100	1/16W	R354	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R269	NRSA63D-101X	M.G.RESISTOR	100	1/16W	R355	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R270	NRSA63D-101X		150k	1/16VV	R356	NRSA63D-334X	M.G.RESISTOR	330k	1/16W
R281	NRSA63D-154X	M.G.RESISTOR			R357	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R282	NRSA63D-154X	M.G.RESISTOR	150k	1/16W			M.G.RESISTOR	47k	1/16W
R283	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R358	NRSA63D-473X		4.7k	1/16W
R284	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R359	NRSA63D-472X	M.G.RESISTOR		1/16W
R285	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R360	NRSA63D-472X	M.G.RESISTOR	4.7k	1/1000
R286	NRSA63D-103X	M.G.RESISTOR	10k	1/16W					4 /4 O) A /
R287	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R361	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
R288	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R362	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
					R363	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R289	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R364	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R290	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R365	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R291	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R366	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W
R292	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R367	NRSA63J-0R0X	M.G.RESISTOR	lo	1/16W
R293	NRSA63D-333X	M.G.RESISTOR	33k	1/16W	R368	NRSA63J-0R0X	M.G.RESISTOR	lo	1/16W
R294	NRSA63D-333X	M.G.RESISTOR	33k	1/16W	R371	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
			22k	1/16W	R372	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R295	NRSA63D-223X	M.G.RESISTOR	22k		11372	14113A03D-104A	IVI.G.NESISTOR	TOOK	1,71011
R296	NRSA63D-223X	M.G.RESISTOR		1/16W	R373	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R297	NRSA63D-473X	M.G.RESISTOR	47k	1/16W			M.G.RESISTOR	10k	1/16W
R298	NRSA63D-473X	M.G.RESISTOR	47k	1/16W	R374	NRSA63D-103X			1/16W
					R381	NRSA63D-103X	M.G.RESISTOR	10k	
R299	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	R382	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R300	NRSA63D-104X	M.G.RESISTOR	100k	1/16W	R383	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R301	NRSA63D-473X	M.G.RESISTOR	47k	1/16W	R384	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R302	NRSA63D-473X	M.G.RESISTOR	47k	1/16W	R385	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R303	NRSA63D-473X	M.G.RESISTOR	47k	1/16W	R386	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R304	NRSA63D-473X	M.G.RESISTOR	47k	1/16W	R387	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R305	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R388	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R306	NRSA63D-103X	M.G.RESISTOR	10k	1/16W					
R307	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R397	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R308	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R398	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
11000	14110/4000-100/	Wi.d.MEDIOTOTI	1.01	,,,,,,,,	R399	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R309	NRSA63D-153X	M.G.RESISTOR	15k	1/16W	R400	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R310	NRSA63D-153X	M.G.RESISTOR	15k	1/16W	R401	NRSA63D-121X	M.G.RESISTOR	120	1/16W
			22k	1/16W	R402	NRSA63D-121X	M.G.RESISTOR	120	1/16W
R311	NRSA63D-223X	M.G.RESISTOR	22k	1/16W	R403	NRSA63D-121X	M.G.RESISTOR	120	1/16W
R312	NRSA63D-223X	M.G.RESISTOR	10k	1/16VV	R404	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
R313	NRSA63D-103X	M.G.RESISTOR			R405	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R314	NRSA63D-103X	M.G.RESISTOR	10k	1/16W			1	100	1/16W
R315	NRSA63D-333X	M.G.RESISTOR	33k	1/16W	R408	NRSA63D-101X	M.G.RESISTOR	100	1,1000
R316	NRSA63D-333X	M.G.RESISTOR	33k	1/16W	5400	NIDCACOD ACOV	M C DECICEOR	11.	1/16W
R317	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R409	NRSA63D-102X	M.G.RESISTOR	1k	
R318	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R415	NRSA63D-333X	M.G.RESISTOR	33k	1/16W
1					R417	NRSA63D-224X	M.G.RESISTOR	220k	1/16W
R319	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W	R418	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R320	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W	R419	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R321	NRSA63D-273X	M.G.RESISTOR	27k	1/16W	R420	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R322	NRSA63D-273X	M.G.RESISTOR	27k	1/16W	R421	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R323	NRSA63D-242X	M.G.RESISTOR	2.4k	1/16W	R431	NRSA63D-474X	M.G.RESISTOR	470k	1/16W
R324	NRSA63D-242X	M.G.RESISTOR	2.4k	1/16W	R432	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R325	NRSA63D-393X	M.G.RESISTOR	39k	1/16W	R433	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R326	NRSA63D-393X	M.G.RESISTOR	39k	1/16W					
R329	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16W	R434	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
			3.3k	1/16W	R435	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R330	NRSA63D-332X	M.G.RESISTOR	Jo.JK	1/1000	R436	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
2004	NIDC A COD STOLE	M O DECICEOD	A 71	1/1/0/4/		NRSA63D-104X	M.G.RESISTOR	1k	1/16W
R331	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W	R437				1/16W
R332	NRSA63D-472X	M.G.RESISTOR	4.7k	1/16W	R438	NRSA63D-302X	M.G.RESISTOR	3k	
R333	NRSA63D-331X	M.G.RESISTOR	330	1/16W	R439	NRSA63D-152X	M.G.RESISTOR	1.5k	1/16W
R334	NRSA63D-331X	M.G.RESISTOR	330	1/16W	R440	NRSA63D-750X	M.G.RESISTOR	75	1/16W
R335	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R441	NRSA63D-303X	M.G.RESISTOR	30k	1/16W
R336	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R442	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R337	NRSA63D-331X	M.G.RESISTOR	330	1/16W	R443	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R338	NRSA63D-331X	M.G.RESISTOR	330	1/16W	R444	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R339	NRSA63D-103X	M.G.RESISTOR	10k	1/16W					
R340	NRSA63D-103X	M.G.RESISTOR	10k	1/16W	R445	NRSA63D-102X	M.G.RESISTOR	1k	1/16W
1	1	11.525101511		.,	R446	NRSA63D-223X	M.G.RESISTOR	22k	1/16W
ī	1		1	1	11,440				

Symbol No.	Part No.	Part Name	Description
R447	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R451	NRSA63D-103X	M.G.RESISTOR	100k 1/16W
R452	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R453	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R454	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R455	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R456	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R450	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
H45/	NRSA63D-104X	WI.G.RESISTOR	
R458 R459	NRSA63D-104X NRSA63D-472X	M.G.RESISTOR M.G.RESISTOR	100k 1/16W 4.7k 1/16W
R460	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R462	NRSA63D-153X	M.G.RESISTOR	15k 1/16W
R463	NRSA63D-333X	M.G.RESISTOR	33k 1/16W
R464	NRSA63D-123X	M.G.RESISTOR	12k 1/16W
R465	NRSA63D-333X	M.G.RESISTOR	33k 1/16W
R466	NRSA63D-823X	M.G.RESISTOR	82k 1/16W
R467	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R469	NRSA63D-224X	M.G.RESISTOR	220k 1/16W
R470	NRSA63D-224X	M.G.RESISTOR	220k 1/16W
R471	NRSA63D-224X	M.G.RESISTOR	220k 1/16W
R476	NRSA63J-100X	M.G.RESISTOR	10 1/16W
R485	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R486	NRSA63D-334X	M.G.RESISTOR	330k 1/16W
R487	NRSA63D-220X	M.G.RESISTOR	22 1/16W
R488	NRSA63D-220X	M.G.RESISTOR	22 1/16W
R489	NRSA63D-471X	M.G.RESISTOR	470 1/16W
R491	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R492	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R493	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R494	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R495	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R496	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R497	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R498	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R499	NRSA63D-471X	M.G.RESISTOR	470 1/16W
R501	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R502	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R503	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R504	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R505	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R506	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R601	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W (E
R602	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W (E
R603	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R604	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W (E
R605	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W (E
R701	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R702	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R703	NRSA63D-473X	M.G.RESISTOR	47k 1/16W
R704	NRSA63D-473X	M.G.RESISTOR	47k 1/16W
R705	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R706	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R707	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R708	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R709	NRSA63D-223X	M.G.RESISTOR	22k 1/16W
R710	NRSA63D-223X	M.G.RESISTOR	22k 1/16W
R721 R722	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 1/16W 10k 1/16W
R723 R724	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 1/16W 10k 1/16W
R725	NRSA63D-101X	M.G.RESISTOR	100 1/16W
R726	NRSA63D-122X	M.G.RESISTOR	1.2k 1/16W
R727	NRSA63D-122X	M.G.RESISTOR	1.2k 1/16W
R728	NRSA63D-330X	M.G.RESISTOR	33 1/16W
R729	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R730	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R731	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R751	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R752	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R753	NRSA63D-303X	M.G.RESISTOR	30k 1/16W
R754	NRSA63D-303X	M.G.RESISTOR	30k 1/16W
R755	NRSA63D-822X	M.G.RESISTOR	8.2k 1/16W
R756	NRSA63D-822X	M.G.RESISTOR	8.2k 1/16W

Symbol	Part No.	Part Name	De	scription
No.				
R757	NRSA63D-822X	M.G.RESISTOR	8.2k	1/16W 1/16W
R758	NRSA63D-822X	M.G.RESISTOR M.G.RESISTOR	8.2k 5.6k	1/16VV
R759 R760	NRSA63D-562X NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R761	NRSA63D-103X	M.G.RESISTOR	3.3k	1/16W
R762	NRSA63D-332X	M.G.RESISTOR	3.3k	1/16VV
R763	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R764	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R765	NRSA63D-220X	M.G.RESISTOR	22	1/16W
R766	NRSA63D-220X	M.G.RESISTOR	22	1/16W
R767	NRSA63D-122X	M.G.RESISTOR	1.2k	1/16W
R768	NRSA63D-122X	M.G.RESISTOR	1.2k	1/16W
R769	NRSA63D-103X	M.G.RESISTOR	10k 47k	1/16W 1/16W
R770 R771	NRSA63D-473X NRSA63J-0R0X	M.G.RESISTOR M.G.RESISTOR	0	1/16W
R772	NRSA63D-333X	M.G.RESISTOR	33k	1/16W
R773	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R775	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R777	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R778	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R779	NRSA63D-104X	M.G.RESISTOR	100k	1/16W
R780	NRSA63D-104X	M.G.RESISTOR	100k	1/16W 1/16W
R781	NRSA63D-104X	M.G.RESISTOR	100k 100k	1/16VV 1/16VV
R782 R783	NRSA63D-104X NRSA63D-104X	M.G.RESISTOR M.G.RESISTOR	100k	1/16W
R784	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R785	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R786	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R787	NRSA63D-101X	M.G.RESISTOR	100	1/16W
R788	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R789	NRSA63D-103X	M.G.RESISTOR	10k	1/16W 1/16W
R790	NRSA63D-101X	M.G.RESISTOR M.G.RESISTOR	100	1/16W
R791 R801	NRSA63D-101X NRSA63D-822X	M.G.RESISTOR	8.2k	1/16W
R802	NRSA63D-822X	M.G.RESISTOR	8.2k	1/16W
R803	NRSA63D-182X	M.G.RESISTOR	1.8k	1/16W
R804	NRSA63D-182X	M.G.RESISTOR	1.8k	1/16W
R805	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R806	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R807	NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 10k	1/16VV 1/16VV
R808 R809	NRSA63D-103X NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R810	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R811	NRSA63D-103X	M.G.RESISTOR	10k	1/16W
R812	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R813	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R814	NRSA63D-103X	M.G.RESISTOR	10k	1/16VV
R815	NRSA63D-330X NRSA63D-330X	M.G.RESISTOR	33 33	1/16W 1/16W
R816	NRSA63D-330X	M.G.RESISTOR M.G.RESISTOR	33	1/16 V V
R817 R818	NRSA63D-330X	M.G.RESISTOR	33	1/16W
R821	NRSA63D-473X	M.G.RESISTOR	47k	1/16W
R822	NRSA63D-473X	M.G.RESISTOR	47k	1/16VV
R823	NRSA63D-220X	M.G.RESISTOR	22	1/16W
R824	NRSA63D-220X	M.G.RESISTOR	22	1/16W
R853	NRSA63J-0R0X	M.G.RESISTOR	0	1/16VV
R854	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W 1/16W
R855	NRSA63J-0R0X NRSA63J-0R0X	M.G.RESISTOR M.G.RESISTOR	0	1/16 V V
R877 R879	NRSA63J-0R0X	M.G.RESISTOR	0	1/16
R901	NRSA63D-152X	M.G.RESISTOR	1.5k	1/16
R902	NRSA63D-152X	M.G.RESISTOR	1.5k	1/16V
R903	NRSA63D-153X	M.G.RESISTOR	15k	1/16W
R904 R905	NRSA63D-153X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR	15k 22k	1/16W 1/16W
R906	NRSA63D-223X	M.G.RESISTOR	22k	1/16₩
R907	NRSA63D-103X	M.G.RESISTOR	10k	1/16V
R908	NRSA63D-103X	M.G.RESISTOR	10k	1/16₩
R909	NRSA63D-243X	M.G.RESISTOR	24k	1/16V
R910	NRSA63D-243X	M.G.RESISTOR	24k	1/16V
R911	NRSA63D-223X	M.G.RESISTOR	22k	1/16V
R912	NRSA63D-223X	M.G.RESISTOR	22k	1/16V
R913	NRSA63D-101X	M.G.RESISTOR	100	1/16 V \

[AUDIO&LCD]

Symbol No.	Part No.	Part Name	Description
R914 R915	NRSA63D-101X NRSA63D-124X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 120k 1/16W
R916	NRSA63D-124X	M.G.RESISTOR	120k 1/16W
R917	NRSA63D-124X	M.G.RESISTOR	10k 1/16W
	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R918			22k 1/16W
R921	NRSA63D-223X	M.G.RESISTOR	
R922	NRSA63D-223X	M.G.RESISTOR	22k 1/16W 560 1/16W
R925	NRSA63D-561X	M.G.RESISTOR M.G.RESISTOR	560 1/16W
R926	NRSA63D-561X		10k 1/16W
R927	NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR	10k 1/16W
R928 R931	NRSA63D-103X NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R932	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R941	NRSA63D-393X	M.G.RESISTOR	39k 1/16W
R942	NRSA63D-393X	M.G.RESISTOR	39k 1/16W
R943	NRSA63D-822X	M.G.RESISTOR	8.2k 1/16W
R944	NRSA63D-822X	M.G.RESISTOR	8.2k 1/16W
R945	NRSA63J-105X	M.G.RESISTOR	1M 1/16W
R946	NRSA63J-105X	M.G.RESISTOR	1M 1/16W
R951	NRSA63D-113X	M.G.RESISTOR	11k 1/16W
R952	NRSA63D-113X	M.G.RESISTOR	11k 1/16W
R953	NRSA63D-912X	M.G.RESISTOR	9.1k 1/16W
R954	NRSA63D-912X	M.G.RESISTOR	9.1k 1/16W
R955	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R956	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R961	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R962	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R963	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R964	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R965	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R966	NRSA63D-103X	M.G.RESISTOR	10k 1/16W
R971	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R972	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R973	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R974	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
R981	NRSA63D-392X	M.G.RESISTOR	3.9k 1/16W
R982	NRSA63D-392X	M.G.RESISTOR	3.9k 1/16W
R985	NRSA63J-4R7X	M.G.RESISTOR	4.7 1/16W
R986	NRSA63D-123X	M.G.RESISTOR	12k 1/16W
R987	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R988 R989	NRSA63D-474X NRSA63D-560X	M.G.RESISTOR M.G.RESISTOR	470k 1/16W 56 1/16W
R990	NRS12BJ-681X	M.G.RESISTOR	680 1/2W
R991	NRSA63D-104X	M.G.RESISTOR	100k 1/16W
VR1	QVQ0162-A14	VAL.RESISTOR	10k A1 REC LEVEL
VR2	QVQ0162-A14	VAL.RESISTOR	10k A2 REC LEVEL
VR731	NVP1415-103X	TRIM.RESISTOR	10k
VR732	NVP1415-103X	TRIM.RESISTOR	10k
C1	NDC31HJ-221X	CER.CAPACITOR	220p 50V
C2	NDC31HJ-221X	CER.CAPACITOR	220p 50V
C3	NDC31HJ-221X	CER.CAPACITOR	220p 50V
C4	NDC31HJ-221X	CER.CAPACITOR	220p 50V
C5	NDC31HJ-221X	CER.CAPACITOR	220p 50V
C6	NDC31HJ-221X	CER.CAPACITOR	220p 50V
C7	NDC31HJ-221X	CER.CAPACITOR	220p 50V
C8	NDC31HJ-221X	CER.CAPACITOR	220p 50V
C11	NEH91HM-105X	E.CAPACITOR	1 50V
C12	NEH91HM-105X	E.CAPACITOR	1 50V
C13	NEH91HM-105X	E.CAPACITOR	1 50V
C14	NEH91HM-105X	E.CAPACITOR	1 50V
C15	NEN21HM-475X	N.P.CAPACITOR	4.7 50V
C16	NEN21HM-475X	N.P.CAPACITOR	4.7 50V
C17	NEN21HM-475X	N.P.CAPACITOR	4.7 50V
C18	NEN21HM-475X	N.P.CAPACITOR	4.7 50V
C33	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C34	NCB31CK-104X	CER.CAPACITOR	0.1 16V
	NCB31CK-104X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR	0.1 16V 0.1 16V
C37 C38	THOUGHT CK-104X		
	NCB11CK-105X	CER.CAPACITOR	1 16V

Symbol No.	Part No.	Part Name	Descript	ion
C41 C42 C61 C62 C63 C64 C65 C66	NCB11CK-105X NCB11CK-105X NDC31HJ-101X NDC31HJ-101X NDC31HJ-101X NDC31HJ-101X NDC31HJ-330X NDC31HJ-330X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	1 1 100p 100p 100p 100p 33p 33p	16V 16V 50V 50V 50V 50V 50V 50V
C67 C68 C69 C70 C71 C72 C73 C74 C75 C76	NCB31CK-104X NCB31CK-104X NBE41EM-475X NBE41EM-475X NCB31CK-104X NCB31CK-104X NBE41EM-475X NBE41EM-475X NCB31CK-104X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.1 0.1 4.7 4.7 0.1 0.1 4.7 4.7 0.1 0.1	16V 16V 25V 25V 16V 16V 25V 25V 16V 16V
C81 C82 C83 C84 C85 C86 C89 C90 C91	NCB31CK-104X NCB31CK-104X NFV41HJ-333X NFV41HJ-333X NBE71CM-476X NBE71CM-476X NDC31HJ-330X NDC31HJ-330X NBE41EM-475X NBE41EM-475X	CER.CAPACITOR CER.CAPACITOR FILM CAPACITOR FILM CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR	0.1 0.1 0.033 0.033 47 47 33p 4.7 4.7	16V 16V 50V 50V 16V 16V 50V 50V 25V 25V
C93 C94 C95 C96 C97 C98 C99 C100 C101 C102	NBE41EM-475X NBE41EM-475X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X NDC31HJ-101X NDC31HJ-101X NCB31CK-105X NCB11CK-105X	TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	4.7 4.7 0.1 0.1 0.1 0.1 100p 100p	25V 25V 16V 16V 16V 16V 50V 50V 16V
C103 C104 C105 C106 C107 C108 C109 C110 C111 C112	NBE41EM-475X NBE41EM-475X NBE41EM-475X NBE41EM-475X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X NDC31HJ-330X NDC31HJ-330X	TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	4.7 4.7 4.7 4.7 0.1 0.1 0.1 0.1 33p 33p	25V 25V 25V 25V 16V 16V 16V 50V 50V
C113 C114 C115 C116 C117 C118 C119 C120 C121 C122	NEN21HM-105 NEN21HM-105 NBE61EM-226X NBE61EM-226X NBE51EM-106X NBE51EM-106X NCB31CK-104X NCB31CK-104X NCB31CK-104X NDC31HJ-101X	N.P.CAPACITOR N.P.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	1 1 22 22 22 10 10 0.1 0.1 0.1 100p 100p	50V 50V 25V 25V 25V 25V 16V 16V 50V
C123 C124 C125 C126 C127 C128 C129 C130 C131 C132	NBE41CM-106X NBE41CM-106X NDC31HJ-330X NDC31HJ-330X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X NBE41EM-475X NBE41EM-475X	TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR	10 10 33p 33p 0.1 0.1 0.1 0.1 4.7 4.7	16V 16V 50V 50V 16V 16V 16V 25V 25V
C133 C134 C135 C136 C139	NBE41EM-475X NBE41EM-475X NBE41CM-106X NBE41CM-106X NDC31HJ-100X	TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR	4.7 4.7 10 10 10p	25V 25V 16V 16V 50V

Symbol No.	Part No.	Part Name	Description
C140	NDC31HJ-100X	CER.CAPACITOR	10p 50V
C141	NEH60JM-107X	E.CAPACITOR	100 6.3V
C142	NEH60JM-107X	E.CAPACITOR	100 6.3V
C143	NEH60JM-107X	E.CAPACITOR	100 6.3V
C144	NEH60JM-107X	E.CAPACITOR	100 6.3V
C145	NDC31HJ-100X	CER.CAPACITOR	10p 50V
C146	NDC31HJ-100X	CER.CAPACITOR	10p 50V
C147	NDC31HJ-101X	CER.CAPACITOR	100p 50V
C148	NDC31HJ-101X	CER.CAPACITOR	100p 50V
C149	NBE51CM-226X	TAN.CAPACITOR	22 16V
C150	NBE51CM-226X	TAN.CAPACITOR	22 16V
C151	NBE71CM-476X	TAN.CAPACITOR	47 16V
C152	NBE71CM-476X	TAN.CAPACITOR	47 16V
C153	NBE51EM-106X	TAN.CAPACITOR	10 25V
C154	NBE51EM-106X	TAN.CAPACITOR	10 25V
C155	NCB31CK-223X	CER.CAPACITOR	0.022 16V
C156	NCB31CK-223X	CER.CAPACITOR	0.022 16V
C157	NDC31HJ-471X	CER.CAPACITOR	470p 50V
C158	NDC31HJ-471X	CER.CAPACITOR	470p 50V
C159	NBE41CM-106X	TAN.CAPACITOR	10 16V
C160	NBE41CM-106X	TAN.CAPACITOR	10 16V
C161	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C162	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C163 C164	NCB11CK-105X NCB11CK-105X	CER.CAPACITOR CER.CAPACITOR	1 16V 1 16V
C167	NEH91CM-476X	E.CAPACITOR	47 16V
C168	NEH91CM-476X	E.CAPACITOR	47 16V
C171	NBE41CM-106X	TAN.CAPACITOR	10 16V
C172	NBE41CM-106X	TAN.CAPACITOR	10 16V
C177	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C178	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C179	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C180	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C181	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C182	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C183	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C184	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C185	NBE61EM-226X	TAN.CAPACITOR	22 25V
C186	NBE71CM-476X	TAN.CAPACITOR	47 16V
C187	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C188	NCB31CK-104X	CER.CAPACITOR	0.1 16V 47 10V
C189 C190	NBE51AM-476X NBE51AM-476X	TAN.CAPACITOR	47 10V 47 10V
C190	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C191	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C193	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C194	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C301	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C302	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C303	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C304	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C305	NCB11CK-105X	CER.CAPACITOR	1 16V
C306	NCB11CK-105X	CER.CAPACITOR	1 16V
C307	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C308	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C309	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C310	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C311	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C312	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C313	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C314	NCB31CK-104X	CER.CAPACITOR	0.1 16V 33p 50V
C315 C316	NDC31HJ-330X NDC31HJ-330X	CER.CAPACITOR	33p 50V 33p 50V
C316	NEN21HM-105	N.P.CAPACITOR	1 50V
C317	NEN21HM-105	N.P.CAPACITOR	1 50V
C319	NBE61EM-226X	TAN.CAPACITOR	22 25V
C320	NBE61EM-226X	TAN.CAPACITOR	22 25V
C321	NBE51EM-106X	TAN.CAPACITOR	10 25V
C322	NBE51EM-106X	TAN.CAPACITOR	10 25V
C323	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C324	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C325	NDC31HJ-101X	CER.CAPACITOR	100p 50V 100p 50V
C326	NDC31HJ-101X	CER.CAPACITOR	100p 50V

Symbol No.	Part No.	Part Name	Description
C327	NBE41CM-106X	TAN.CAPACITOR	10 16V
C328	NBE41CM-106X	TAN.CAPACITOR	10 16V
C329	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C330	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C331	NCB31CK-104X	CER.CAPACITOR	0.1 16V 0.1 16V
C332 C333	NCB31CK-104X NCB31CK-104X	CER.CAPACITOR	0.1 16V 0.1 16V
C334	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C335	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C336 C337	NBE41EM-475X NBE41EM-475X	TAN.CAPACITOR TAN.CAPACITOR	4.7 25V 4.7 25V
C337	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C339	NBE41CM-106X	TAN.CAPACITOR	10 16V
C340	NBE41CM-106X	TAN.CAPACITOR	10 16V
C343 C344	NDC31HJ-100X NDC31HJ-100X	CER.CAPACITOR CER.CAPACITOR	10p 50V 10p 50V
C345	NEH60JM-107X	E.CAPACITOR	100 6.3V
C346	NEH60JM-107X	E.CAPACITOR	100 6.3V
C347	NEH60JM-107X	E.CAPACITOR	100 6.3V 100 6.3V
C348 C349	NEH60JM-107X NDC31HJ-100X	E.CAPACITOR CER.CAPACITOR	100 6.3V 10p 50V
C350	NDC31HJ-100X	CER.CAPACITOR	10p 50V
C351	NDC31HJ-101X	CER.CAPACITOR	100p 50V
C352	NDC31HJ-101X	CER.CAPACITOR	100p 50V
C353 C354	NBE51CM-226X NBE51CM-226X	TAN.CAPACITOR TAN.CAPACITOR	22 16V 22 16V
C355	NBE71CM-476X	TAN.CAPACITOR	47 16V
C356	NBE71CM-476X	TAN.CAPACITOR	47 16V
C357	NBE51EM-106X	TAN.CAPACITOR	10 25V
C358 C359	NBE51EM-106X NCB31CK-223X	TAN.CAPACITOR CER.CAPACITOR	10 25V 0.022 16V
C360	NCB31CK-223X	CER.CAPACITOR	0.022 16V
C361	NDC31HJ-471X	CER.CAPACITOR	470p 50V
C362 C363	NDC31HJ-471X NBE41CM-106X	CER.CAPACITOR TAN.CAPACITOR	470p 50V 10 16V
C364	NBE41CM-106X	TAN.CAPACITOR	10 16V
C365	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C366	NDC31HJ-330X	CER.CAPACITOR	33p 50V 1 16V
C367 C368	NCB11CK-105X NCB11CK-105X	CER.CAPACITOR CER.CAPACITOR	1 16V
C371	NBE41CM-106X	TAN.CAPACITOR	10 16V
C372	NBE41CM-106X	TAN.CAPACITOR	10 ⋅ 16∨
C377	NCB11CK-105X	CER.CAPACITOR	1 16V
C378 C379	NCB11CK-105X NCB11CK-105X	CER.CAPACITOR CER.CAPACITOR	1 16V 1 16V
C380	NCB11CK-105X	CER.CAPACITOR	1 16V
C381	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C382	NBE41EM-475X	TAN.CAPACITOR	4.7 25V 0.1 16V
C383 C384	NCB31CK-104X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR	0.1 16V 0.1 16V
C385	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C386	NBE41EM-475X	TAN.CAPACITOR	4.7 25V
C387	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C388 C389	NCB31CK-104X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR	0.1 16V 0.1 16V
C390	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C391	NBE61EM-226X	TAN.CAPACITOR	22 25V
C392	NBE71CM-476X	TAN.CAPACITOR	47 16V 47 10V
C393 C394	NBE51AM-476X NBE51AM-476X	TAN.CAPACITOR TAN.CAPACITOR	47
C395	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C396	NDC31HJ-330X	CER.CAPACITOR	33p 50V
C397 C398	NDC31HJ-330X NDC31HJ-330X	CER.CAPACITOR CER.CAPACITOR	33p 50V 33p 50V
C401	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C402	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C403	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C409 C410	NBE51AM-476X NCB31CK-104X	TAN.CAPACITOR CER.CAPACITOR	10V 0.1 16V
C410	NCB10JM-335X	CER.CAPACITOR	3.3 6.3V
C412	NCB31CK-104X	CER.CAPACITOR	0.1 16V
C413	NCB31CK-104X	CER.CAPACITOR	0.1 16V
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Symbol No.	Part No.	Part Name	Desci	ription
C414	NEH91CM-476X	E.CAPACITOR	47	16V
C415	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C416	NCB31HK-122X	CER.CAPACITOR	1200p	50V
C417	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C418	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C419	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C420	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C421	NDC31HJ-331X	CER.CAPACITOR	330p	50V
C422	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C431	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C432	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C433	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C434	NCB11CK-105X	CER.CAPACITOR	1	16V
C435	NEH91CM-106X	E.CAPACITOR	10	16V
C436	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C437	QEZ0243-22A	E.CAPACITOR	40	401/
C438	NEH91CM-106X	E.CAPACITOR	10	16V
C439	NCF21CZ-334X	CER.CAPACITOR	0.33	16V
C440	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V
C442	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V
C444	NEH91EM-336X	E.CAPACITOR	33	25V
C446	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C447	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C448	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C449	NDC31HJ-180X	CER.CAPACITOR	18p	50V
C450	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C451	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C452	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C701	NBE41CM-106X	TAN.CAPACITOR	10	16V
C702	NBE41CM-106X	TAN.CAPACITOR	10	16V
C711	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C712	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C713	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C739	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C740	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C741	NCB31HK-102X	CER.CAPACITOR	1000p	50V
C742	NCB31HK-102X	CER.CAPACITOR	1000p	50V
C743	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C744	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C745	NBE51EM-106X	TAN.CAPACITOR	10	25V
C746	NBE51EM-106X	TAN.CAPACITOR	10	25V
C747	NBE51EM-106X	TAN.CAPACITOR	10	25V
C748	NBE51EM-106X	TAN.CAPACITOR	10	25V
C749	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C750	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C751	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C752	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C755	NCB31HK-222X	CER.CAPACITOR	2200p	50V
C757 C758	NBE61EM-226X NBE61EM-226X	TAN.CAPACITOR	22	25V 25V
C759	NBE51EM-106X	TAN.CAPACITOR	10	25V 16V
C774	NCB31CK-104X		0.1	
C775	NCB31HK-102X	CER.CAPACITOR	1000p	50V
C801	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C802	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C803	NBE51EM-106X	TAN.CAPACITOR	10	25V
C804	NBE51EM-106X	TAN.CAPACITOR	10	25V
C805 C806	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C806 C807	NCB31CK-104X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR	0.1	16V 16V
C808		CER.CAPACITOR	0.1	16V
C808	NCB31CK-104X NBE51EM-106X	TAN.CAPACITOR	10.1	25V
C810	NBE51EM-106X	TAN.CAPACITOR	10	25V
C811	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C812	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C813	NBE51EM-106X	TAN.CAPACITOR	10	25V
C814	NBE51EM-106X	TAN.CAPACITOR	10	25V 25V
C815	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C816	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C817	NBE51CM-226X	TAN.CAPACITOR	22	16V
C818	NEH91EM-336X	E.CAPACITOR	33	25V
0010		CER.CAPACITOR	33p	50V
C851	NDC31HJ-330X			

Symbol No.	Part No.	Part Name	Description
C853 C854 C855 C856 C857 C858 C861	NDC31HJ-330X NDC31HJ-330X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X NB51EM-106X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR	33p 50V 33p 50V 0.1 16V 0.1 16V 0.1 16V 0.1 16V 10 25V
C862 C863 C864 C865 C866 C867 C868 C901 C902 C903	NBE51EM-106X NBE51EM-106X NBE51EM-106X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-106X NBE41CM-106X NBE41CM-106X NCB11CK-105X	TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR	10 25V 10 25V 10 25V 0.1 16V 0.1 16V 0.1 16V 10 16V 10 16V 11 16V
C904 C905 C906 C907 C908 C909 C910 C911 C912 C913	NCB11CK-105X NCB11CK-105X NCB11CK-105X NBE41EM-475X NBE41EM-475X NBE41EM-475X NBE41EM-475X NDC31HJ-821X NDC31HJ-821X NBC31HJ-821X NBE41EM-475X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR	1 16V 1 16V 1 16V 4.7 25V 4.7 25V 4.7 25V 4.7 25V 820p 50V 820p 50V 4.7 25V
C914 C915 C916 C917 C918 C919 C920 C921 C922 C923	NBE41EM-475X NDC31HJ-680X NDC31HJ-680X NBE71CM-476X NBE71CM-476X NBE71CM-476X NBE71CM-476X NFV41HJ-273X NFV41HJ-273X NFV41HJ-273X NBE61EM-226X	TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR FILM CAPACITOR FILM CAPACITOR TAN.CAPACITOR	4.7 25V 68p 50V 68p 50V 47 16V 47 16V 47 16V 47 16V 0.027 50V 0.027 50V 22 25V
C924 C925 C926 C927 C928 C929 C930 C931 C932 C933	NBE61EM-226X NBE21CM-475X NBE21CM-475X NCB31CK-104X NCB31CK-104X NCB31CK-104X NCB31CK-104X NBE41EM-475X NBE41EM-475X NCB31CK-104X	TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR	22 25V 4.7 16V 4.7 16V 0.1 16V 0.1 16V 0.1 16V 0.1 16V 4.7 25V 4.7 25V 0.1 16V
C934 C935 C936 C937 C938 C941 C942 C943 C944 C947	NCB31CK-104X NDC31HJ-101X NDC31HJ-101X NCB11CK-105X NCB11CK-105X NBE41CM-106X NBE41CM-106X NBE51CM-226X NBE51CM-226X NFV41HJ-222X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR	0.1 16V 100p 50V 100p 50V 1 16V 1 16V 10 16V 10 16V 22 16V 22 16V 2200p 50V
C948 C949 C950 C951 C952 C953 C954 C955 C956	NFV41HJ-222X NCB11CK-105X NCB11CK-105X NBE41EM-475X NBE41EM-475X NBE41EM-475X NBE41EM-475X NCB31CK-104X NCB31CK-104X NCB31CK-104X	FILM CAPACITOR CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	2200p 50V 1 16V 1 16V 4.7 25V 4.7 25V 4.7 25V 4.7 25V 0.1 16V 0.1 16V
C958 C961 C962 C963 C964 C965	NCB31CK-104X NDC31HJ-181X NDC31HJ-181X NDC31HJ-561X NFV41HJ-823X NFV41HJ-823X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR FILM CAPACITOR FILM CAPACITOR	0.1 16V 180p 50V 180p 50V 560p 50V 0.082 50V 0.082 50V

Symbol No.	Part No.	Part Name	Descripti	on
C966 C967 C968 C971	NCB31HK-392X NBE51EM-106X NBE61EM-226X NCB11CK-105X	CER.CAPACITOR TAN.CAPACITOR TAN.CAPACITOR CER.CAPACITOR	3900p 10 22 1	50V 25V 25V 16V
C972 C973 C974 C975 C976 C981 C982	NCB11CK-105X NDC31HJ-330X NDC31HJ-330X NDC31HJ-330X NDC31HJ-330X NDC31HJ-330X NDC31HJ-330X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	1 33p 33p 33p 33p 33p 33p	16V 50V 50V 50V 50V 50V 50V
L1 L2 L3 L4 L401 L403 L404 L405 L801 L802	NOL124J-100X NOL124J-100X NOL124J-100X NOL124J-100X NOL114K-100X NOL114K-100X NOL114K-100X NOL114K-100X NOL114K-100X NOL114K-220X NOL114K-220X	COIL COIL COIL COIL COIL COIL COIL COIL	10uH 10uH 10uH 10uH 10uH 10uH 10uH 10uH	
L803 L804 L805 L806 L807 L808 L809 L810	NQL114K-100X NQL114K-100X NQL114K-220X NQL114K-220X NQL114K-220X NQL114K-220X NQL114K-220X NQL114K-220X	COIL COIL COIL COIL COIL COIL COIL COIL	10uH 10uH 22uH 22uH 22uH 22uH 22uH 22uH	
LC801	PGZ01972Z	LC FILTER	LC801-810	
X401 X402	NAX0065-001X NAX0074-001X	CRYSTAL CRYSTAL	4.9152MHz 32.768MHz	
\$1 \$2 \$301 \$302 \$303 \$401 \$402 \$403 \$404 \$405	QSW0334-001 QSW0334-001 QSW0334-001 QSW0334-001 QSW0334-001 QSW0334-001 QSW0334-001 QSW0334-001 QSW0334-001 QSW0334-001	SLIDE SWITCH SLIDE SWITCH	ALC A1 ALC A2 ALC M1 ALC M2 3PIN MIC SW LIGHT REGEN/PRESET FREE/REC OPTION/TC UB/TC/CTL	(E)
\$406 \$407 \$408 \$409 \$410 \$411 \$412	NSW0005-001X NSW0005-001X NSW0005-001X NSW0005-001X NSW0005-001X NSW0005-001X QSW0334-001	TACT SWITCH TACT SWITCH TACT SWITCH TACT SWITCH TACT SWITCH TACT SWITCH SLIDE SWITCH	HOLD SHIFT ADVANCE PRESET RESET MENU DA1/2 DA3/4	
CN15 CN30 CN31 CN33 CN35 CN36 CN37 CN38 CN39	QGA1201F2-12X QGF1012F1-10X QGA1201F2-09X QGA1501F2-06W QGA1201F2-05X QGA1201F2-05X QGA1501F2-04W QGA1501F2-02W QGA1201F2-05X QGA1201F2-05X QGA1201F2-03X	CONNECTOR	12PIN 10PIN 9PIN 6PIN 5PIN 5PIN 4PIN 2PIN 5PIN 3PIN	
CN42 CN43 CN44 CN45 CN55	QGA1201F2-10X QGF1012F1-18X QGF1012F1-14X QGA1201F2-04X PGZ01932-012Z	CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR	10PIN 18PIN 14PIN 4PIN 12PIN	

Symbol No.	Part No.	Part Name	Description
TP1	NNZ0009-001X	TEST POINT	TP1-911
K1 K401 T901	NQR0292-001X PGZ00627Z NQR0185-001X	FERAITE BEAD FERRATE BEADS BIAS OSC COIL	K1-4,701 K401-407
TB1 TB2	SQMX002-001Z PGZ02228	TERMINAL EARTH LUG	TB1,401
SP1	SC43656-095	LED SPACER	FOR LD401
PW1	SCK2571-01-N1A	AUDIO-SUB BOARD ASSEMBLY	(U)
R1	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W (L
CN101	QGA1201F2-06X	CONNECTOR	6PIN (U)

6.9 PR BOARD ASSEMBLY PARTS LIST 09

SCK2535-01-00A 0 9 Description

SCI	(2535-01-00A		09
Symbol No.	Part No.	Part Name	Description
IC101 IC201 IC202 IC203 IC204 IC205	AN3730FA AN3730FA AN77L03M-X DS90LV032TM-X TC74VHC4040FT-X TC74VHC153FT-X	I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M) I.C.(M)	MATSUSHITA MATSUSHITA MATSUSHITA NATIONAL SEMICO TOSHIBA TOSHIBA
Q101 Q102 Q103 Q104 Q105 Q106 Q201 Q202 Q203 Q204	XN4504-W 2SA1462/3-4/-X 2SC3937-X XN4504-W 2SA1462/3-4/-X 2SC3937-X XN4504-W 2SA1462/3-4/-X 2SC3937-X XN4504-W	TRANSISTOR	MATSUSHITA NEC MATSUSHITA NEC MATSUSHITA MATSUSHITA MATSUSHITA NEC MATSUSHITA NEC MATSUSHITA MATSUSHITA
Q205 Q206 Q209 Q210 Q301 Q302 Q303 Q304 Q305 Q306	2SA1462/3-4/-X 2SC3937-X 2SA1577/QR/-X DTC114EUA-X 2SK621-X 2SK621-X 2SK1037AK/QR/-X 2SA1037AK/QR/-X 2SC3735/4-5/-X	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR FET FET TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	NEC MATSUSHITA ROHM ROHM MATSUSHITA MATSUSHITA ROHM ROHM NEC NEC
Q307 Q308	2SC3735/4-5/-X 2SC3735/4-5/-X	TRANSISTOR TRANSISTOR	NEC NEC
R101 R102 R103 R104 R106 R107 R108 R109 R110 R111	NRSA63D-202X NRSA63D-682X NRSA63D-182X NRSA63D-561X NRSA63D-102X NRSA63D-331X NRSA63D-3102X NRSA63D-152X NRSA63D-152X NRSA63D-152X NRSA63D-152X	M.G.RESISTOR	2k 1/16W 6.8k 1/16W 1.8k 1/16W 560 1/16W 330 1/16W 1k 1/16W 1.5k 1/16W 1.5k 1/16W 1.5k 1/16W 1.5k 1/16W 1.5k 1/16W 1.5k 1/16W
R112 R113 R116 R117 R118 R119 R120 R121 R122 R123	NRSA63D-153X NRSA63D-681X NRSA63D-681X NRSA63D-152X NRSA63D-153X NRSA63D-152X NRSA63D-152X NRSA63D-152X NRSA63D-102X NRSA63D-331X NRSA63D-102X	M.G.RESISTOR	15k 1/16W 680 1/16W 680 1/16W 1.5k 1/16W
R126 R127 R128 R129 R131 R132 R135 R138 R201 R202	NRSA63D-103X NRSA63D-272X NRSA63D-223X NRSA63D-222X NRSA63D-221X NRSA63D-221X NRSA63D-151X NRSA63D-151X NRSA63D-151X NRSA63D-202X NRSA63D-682X	M.G.RESISTOR	10k 1/16W 2.7k 1/16W 22k 1/16W 2.2k 1/16W 220 1/16W 220 1/16W 150 1/16W 150 1/16W 2k 1/16W 6.8k 1/16W
R203 R204 R206 R207 R208 R209 R210 R211 R212 R213	NRSA63D-182X NRSA63D-561X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-152X NRSA63D-152X NRSA63D-152X NRSA63D-152X NRSA63D-153X NRSA63D-681X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	1.8k 1/16W 560 1/16W 1k 1/16W 330 1/16W 1.5k
R216 R217	NRSA63D-681X NRSA63D-152X	M.G.RESISTOR M.G.RESISTOR	680 1/16W 1.5k 1/16W

Symbol No.	Part No.	Part Name	Description
R218 R219 R220 R221 R222 R223 R226 R227	NRSA63D-153X NRSA63D-152X NRSA63D-152X NRSA63D-102X NRSA63D-331X NRSA63D-102X NRSA63D-103X NRSA63D-272X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	15k 1/16W 1.5k 1/16W 1.5k 1/16W 1.5k 1/16W 330 1/16W 1k 1/16W 10k 1/16W 2.7k 1/16W
R228 R229 R231 R232 R235 R238 R240 R241 R244 R245	NRSA63D-223X NRSA63D-222X NRSA63D-221X NRSA63D-221X NRSA63D-151X NRSA63D-151X NRSA63D-332X NRSA63D-152X NRSA63D-152X NRSA63D-121X NRSA63D-101X	M.G.RESISTOR	22k 1/16W 2.2k 1/16W 220 1/16W 220 1/16W 150 1/16W 150 1/16W 150 1/16W 1.5k 1/16W 1.5k 1/16W 120 1/16W 100 1/16W
R246 R247 R248 R249 R250 R251 R252 R254 R255 R256	NRSA63D-101X NRSA63D-121X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-101X NRSA63D-103X NRSA63D-680X NRSA63D-680X NRSA63D-680X	M.G.RESISTOR	100 1/16W 120 1/16W 100 1/16W 100 1/16W 120 1/16W 100 1/16W 100 1/16W 100 1/16W 100 1/16W 108 1/16W 68 1/16W
R257 R258 R259 R260 R261 R262 R263 R264 R265 R266	NRSA63D-680X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X	M.G.RESISTOR	68 1/16W 10k 1/16W 10k 1/16W 10k 1/16W 1k 1/16W 1k 1/16W 1k 1/16W 1k 1/16W 1k 1/16W 1k 1/16W
R267 R268 R270 R271 R274 R275 R282 R301 R302 R303	NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-102X NRSA63D-223X NRSA63D-223X NRSA63D-682X	M.G.RESISTOR	1k 1/16W 1k 1/16W 1k 1/16W 1k 1/16W 1k 1/16W 1k 1/16W 1c 1/16W 1c 1/16W 1d 1/16W 1d 1/16W 1d 1/16W 1d 1/16W 1d 1/16W 1d 1/16W 1d 1/16W
R304 R305 R306 R307 R308 R309 R310 R311 R312 R313	NRSA63D-682X NRSA63D-150X NRSA63D-150X NRSA63D-272X NRSA63D-272X NRSA63D-560X NRSA63D-560X NRSA63D-560X NRSA63D-560X NRSA63D-560X NRSA63D-272X	M.G.RESISTOR	6.8k 1/16W 15 1/16W 15 1/16W 2.7k 1/16W 2.7k 1/16W 56 1/16W 56 1/16W 56 1/16W 56 1/16W 56 1/16W
R314 R315 R316 R317 R318 R319 R320 R323 R324 R325	NRSA63D-272X NRSA63D-471X NRSA63D-471X NRSA63D-390X NRSA63D-390X NRSA63D-471X NRSA63D-471X NRSA63D-103X NRSA63D-103X NRSA63D-103X NRSA63J-0R0X	M.G.RESISTOR	2.7k 1/16W 470 1/16W 470 1/16W 39 1/16W 39 1/16W 470 1/16W 470 1/16W 10k 1/16W 10k 1/16W 0 1/16W
C101 C102 C103 C104	NCB31HK-103X NCB31EK-223X NCB31HK-152X NDC31HJ-3R0X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.01 50V 0.022 25V 1500p 50V 3p 50V

Symbol No.	Part No.	Part Name	Description	
C105	NCB31HK-102X	CER.CAPACITOR	1000p 50	V
C106	NCB31HK-102X	CER.CAPACITOR	1000p 50	
C107	NCB31HK-102X	CER.CAPACITOR	1000p 50	
C108	NCB31HK-102X	CER.CAPACITOR	1000p 50	
C109	NCB31HK-102X	CER.CAPACITOR	1000p 50	
C1109	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	
		055 04540/505	450 50	
C112 C113	NDC31HJ-151X NCB31CK-104X	CER.CAPACITOR CER.CAPACITOR	150p 50 0.1 16	
C113	NBE21EM-105X	TAN.CAPACITOR	1 25	
			0.01 50	
C116	NCB31HK-103X	CER.CAPACITOR	*.*.	
C117	NDC31HJ-330X	CER.CAPACITOR	33p 50	
C118	NBE21AM-106X	TAN.CAPACITOR	10 10	
C119	NCB31HK-152X	CER.CAPACITOR	1500p 50	
C120	NBE21AM-106X	TAN.CAPACITOR	10 10	
C121 C122	NCB31HK-152X NDC31HJ-330X	CER.CAPACITOR CER.CAPACITOR	1500p 50 33p 50	
C122	NDC31HJ-330X	CEN.CAPACITOR	33p 30	٧
C123	NCB31HK-103X	CER.CAPACITOR	0.01 50	
C124	NBE21EM-105X	TAN.CAPACITOR	1 25	
C125	NCB31CK-104X	CER.CAPACITOR	0.1 16	V
C126	NDC31HJ-151X	CER.CAPACITOR	150p 50	V
C128	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	V
C129	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	V
C131	NCB31CK-104X	CER.CAPACITOR	0.1 16	V
C132	NCB31HK-122X	CER.CAPACITOR	1200p 50	V
C133	NCB31HK-122X	CER.CAPACITOR	1200p 50	
C134	NCB31CK-104X	CER.CAPACITOR	0.1 16	
C135	NDC31HJ-681X	CER.CAPACITOR	680p 50	V
C136	NDC31HJ-470X	CER.CAPACITOR	47p 50	-
C130	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	
C137	NCB31CK-104X	CER.CAPACITOR	0.1 16	
C140	NCB31CK-104X	CER.CAPACITOR	0.1 16	
C141	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	
C156	NDC31HJ-470X	CER.CAPACITOR	47p 50	
C201	NCB31HK-103X	CER.CAPACITOR	0.01 50	
C202	NCB31EK-223X	CER.CAPACITOR	0.022 25	
C203	NCB31HK-152X	CER.CAPACITOR	1500p 50	V
C204	NDC31HJ-3R0X	CER.CAPACITOR	3p 50	V
C205	NCB31HK-102X	CER.CAPACITOR	1000p 50	V
C206	NCB31HK-102X	CER.CAPACITOR	1000p 50	V
C207	NCB31HK-102X	CER.CAPACITOR	1000p 50	V
C208	NCB31HK-102X	CER.CAPACITOR	1000p 50	
C209	NCB31HK-102X	CER.CAPACITOR	1000p 50	V
C210	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	
C212	NDC31HJ-151X	CER.CAPACITOR	150p 50	
C213	NCB31CK-104X	CER.CAPACITOR	0.1 16	
C214	NBE21EM-105X	TAN.CAPACITOR	1 25	
C216	NCB31HK-103X	CER.CAPACITOR	0.01 50	1//
C216	NDC31HJ-330X	CER.CAPACITOR	33p 50	
C217	NBE21AM-106X	TAN.CAPACITOR	10 10	
C218	NCB31HK-152X	CER.CAPACITOR	1500p 50	
C219	NBE21AM-106X	TAN.CAPACITOR	10 10	
C221	NCB31HK-152X	CER.CAPACITOR	1500p 50	
C221		CER.CAPACITOR	33p 50	
	NDC31HJ-330X	CER.CAPACITOR	0.01 50	
C223	NCB31HK-103X NBE21EM-105X	TAN.CAPACITOR	1 25	
C224 C225	NCB31CK-104X	CER.CAPACITOR	0.1	
C226	NDC31HJ-151X	CER.CAPACITOR	150p 50	
C228	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	
C229	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	
C231	NCB31CK-104X	CER.CAPACITOR	0.1 16	
C232	NCB31HK-122X	CER.CAPACITOR	1200p 50	
C233	NCB31HK-122X	CER.CAPACITOR	1200p 50	
C234	NCB31CK-104X	CER.CAPACITOR	0.1 16	
C235	NDC31HJ-681X	CER.CAPACITOR	680p 50	
C236	NDC31HJ-470X	CER.CAPACITOR	47p 50 3.3 6.3	
C237	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	, V
C239	NCB31CK-104X	CER.CAPACITOR	0.1 16	
C240	NCB31CK-104X	CER.CAPACITOR	0.1	
C241	NCB10JM-335X	CER.CAPACITOR	3.3 6.3	
C244	NBE41CM-106X	TAN.CAPACITOR	10 16	
C245	NCB31CK-104X	CER.CAPACITOR	0.1 16	
C246	NBE21AM-106X	TAN.CAPACITOR	10 10	V
C240			3.3 6.3	

Symbol No.	Part No.	Part Name	Descripti	on
C249 C250 C251	NCB31CK-104X NCB31CK-104X NCB31HK-102X	CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.1 0.1 1000p	16V 16V 50V
C252 C253 C254 C255 C256 C257 C258 C301 C302 C303	NCB31HK-102X NDC31HG-101X NDC31HG-101X NDC31HG-101X NDC31HJ-470X NCB31HX-102X NCB31HK-102X NDC31HJ-221X NDC31HJ-221X NDC31HJ-221X NDC31HJ-121X	CER.CAPACITOR	1000p 100p 100p 100p 47p 1000p 1000p 220p 220p 120p	50V 50V 50V 50V 50V 50V 50V 50V 50V
C304 C305 C306 C307 C308 C309 C310 C311 C312 C316	NDC31HJ-121X NCB31HK-103X NCB31HK-103X NDC31HG-100X NDC31HG-100X NDC31HG-100X NDC31HG-100X NDC31HG-100X NDC31HG-100X NDC31HG-100X NCB31HK-103X	CER.CAPACITOR	120p 0.01 0.01 10p 10p 10p 10p 10p 10p 0.01	50V 50V 50V 50V 50V 50V 50V 50V 50V
L101 L102 L103 L104 L201 L202 L203 L204 L301 L302	NOL124J-220X NOL124M-1R0X NOL124J-220X NOL124M-1R0X NOL124J-220X NOL124M-1R0X NOL124J-220X NOL124M-1R0X NOL124M-1R0X NOL124M-1R0X NOL124M-1R0X	COIL COIL COIL COIL COIL COIL COIL COIL	22uH 1uH 22uH 1uH 22uH 1uH 22uH 1uH 1uH	
L303 L304	NQL124M-1R0X NQL124M-1R0X	COIL	1uH 1uH	
CN24 CN54 CN56 CN57	PGZ02149-002Z SSV2615-14 SSV2615-28 QGF0503F3-18X	CONNECTOR CONNECTOR CONNECTOR CONNECTOR	2PIN 14PIN 28PIN 18PIN	
TP204	NNZ0009-001X	TEST POINT	TP204,205,209	
K101 K303	PGZ00627Z PGZ01823-121AZ	FERRATE BEADS EMI FILTER	K101-301 K303-306	
TB1	SSV0779	TERMINAL		

6.10 MT BOARD ASSEMBLY PARTS LIST 10 SCK2536-01-00A 10

Symbol No.	Part No.	Part Name	Description
D1 D2 D3	MA143A-X MA143A-X MA143A-X	DIODE DIODE DIODE	MATSUSHITA MATSUSHITA MATSUSHITA
VR1	QVQ0029-B53	VAL.RESISTOR	5k, TRACKING VR
CN2 CN9 CN11 CN12 CN13 CN14 CN15 CN16 CN18 CN19	QGA1201F2-09X QGA1201F2-08X SCV0502-001 QGA1201F2-07X QGA1201F2-14X QGA1201F2-13X QGA1201F2-12X QGA1201F2-15X QGA2501F1-02 QGA2501F1-05	CONNECTOR	9PIN 8PIN 1PIN 7PIN 14PIN 13PIN 12PIN 15PIN 2PIN 5PIN
K1	SCV2662-027	FERRITE BEADS	K1-6
TB1	PGZ02228	EARTH LUG	TB1,2

6.11 LCD SUB BOARD ASSEMBLY PARTS LIST 11 SCK2536-02-00A

NJU6433FB2 NRSA63D-334X	I.C.(M)	JRC	
NRSA63D-331X NRSA63D-331X NRSA63D-331X NRSA63D-331X NRSA63D-331X NRSA63D-331X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	330k 330 330 330 330 330 330 330	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W
NCB31CK-104X	CER.CAPACITOR	0.1	16V
QGG2005M1-03 QGG2005M1-03 QGG2005M1-03 QGG2005M1-03	CONNECTOR CONNECTOR CONNECTOR CONNECTOR	3PIN 3PIN 3PIN 3PIN	
QLD0052-001 PGZ02384	LCD BACK LIGHT ASSY		
	NRSA63D-331X NRSA63D-331X NRSA63D-331X NCB31CK-104X QGG2005M1-03 QGG2005M1-03 QGG2005M1-03 QGG2005M1-03 QLD0052-001	NRSA63D-331X NRSA63D-331X NRSA63D-331X M.G.RESISTOR M.G.RESISTOR NCB31CK-104X CER.CAPACITOR QGG2005M1-03 QGG2005M1-03 QGG2005M1-03 QGG2005M1-03 CONNECTOR CONNECTOR CONNECTOR CONNECTOR QLD0052-001 LCD	NRSA63D-331X NRSA63D-331X NRSA63D-331X M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR 330 330 330 NCB31CK-104X CER.CAPACITOR 0.1 QGG2005M1-03 QGG2005M1-03 QGG2005M1-03 QGG2005M1-03 CONNECTOR CONNECTOR CONNECTOR CONNECTOR CONNECTOR 3PIN 3PIN 3PIN 3PIN 3PIN 3PIN QLD0052-001 LCD

6.12 I/O JUNC BOARD ASSEMBLY PARTS LIST 12 SCK2574-01-00A

	K2574-01-00A		1 2	
Symbol No.	Part No.	Part Name	Descript	tion
D1 D2	SB140L-6395 RD9.1EW-T1	DIODE ZENER DIODE	SANYO NEC	
R1 R2 R3 R4	NRSA02J-222X NRSA02J-100X NRSA02J-0R0X NRSA02J-0R0X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	2.2k 10 0	1/10W 1/10W 1/10W 1/10W
C1	QETB1EM-478	E.CAPACITOR	4700	25V
LC1	ZJSC-2R2-101-TA	LC FILTER	LC1-8	
CN19 CN22 CN33 CN35 CN36 CN41 CN62 CN63 CN64 CN301	QGA2501C2-05Z QGA2501C2-03Z QGA1501C1-04 QGA1501C1-05 QGA1501C1-06 QGA1501C1-09 QGA1501C1-05 QGA1501C1-05 QGA1501C1-06 QGA3901C1-04	CONNECTOR	5PIN 3PIN 4PIN 5PIN 6PIN 0PIN 5PIN 5PIN 6PIN 4PIN	
CN302 CN303 CN304	QGA3901C1-02 QGA2001C1-02 QGA1501C1-02	CONNECTOR CONNECTOR CONNECTOR	2PIN 2PIN 2PIN	
TP1	QNZ0352-001Z	TEST POINT	TP1-6	
FC1 FC2	QNG0037-001Z QNG0037-001Z	FUSE HOLDER FUSE HOLDER		
K1 K4	SCV2662-027 PGZ00354	FERRITE BEADS FERRATE BEADS	K1,2 K4,5,7	
VA1	QAF0025-220	VARISTOR		

SCK2526-02-00A 13				
Symbol No.	Part No.	Part Name	Descri	ption
IC1	NJM2068M-D-X	I.C.(M)	JRC	
D1 D2	MA143A-X MA143A-X	DIODE DIODE	MATSUSHITA MATSUSHITA	
R1 R2 R3 R4 R6 R7 R8	NRSA63J-100X NRSA63D-121X NRSA63D-472X NRSA63D-822X NRSA63D-121X NRSA63D-472X NRSA63D-822X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	10 120 4.7k 8.2k 120 4.7k 8.2k	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10	NEH91AM-336X NCB11AK-225X NDC31HJ-681X NEH91CM-476X NCB31HK-222X NEH91CM-476X NCB11AK-225X NDC31HJ-681X NCB31HK-222X NCB10JM-335X	E.CAPACITOR CER.CAPACITOR CER.CAPACITOR E.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	33 2.2 680p 47 2200p 47 2.2 680p 2200p 3.3	10V 10V 50V 16V 50V 16V 10V 50V - 50V 6.3V
C11	NCB10JM-335X	CER.CAPACITOR	3.3	6.3V
L1 L2	NQL124K-150X NQL124K-150X	COIL	15uH 15uH	
CN12 CN23	QGA1201F2-07X QGA1201F2-06X	CONNECTOR CONNECTOR	7PIN 6PIN	
K1	SCV2662-027	FERRITE BEADS	K1-4	

6.14 OPERATION BOARD ASSEMBLY PARTS LIST 1 4 SCK2535-02-00A 1 4 C

D902 D903	Part No. SLM-13VWF-X SLM-13VWF-X SLM-13VWF-X	L.E.D. L.E.D. L.E.D.	De	scription
D902 D903	SLM-13VWF-X SLM-13VWF-X	L.E.D.		
D905	SLM-13VWF-X SLM-13VWF-X	L.E.D. L.E.D.		
R902 R903 R904	NRSA63D-332X NRSA63D-332X NRSA63D-472X NRSA63D-223X NRSA63D-222X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	3.3k 3.3k 4.7k 22k 2.2k	1/16W 1/16W 1/16W 1/16W 1/16W
S902 S903 S904 S905	NSW0005-001X NSW0005-001X NSW0005-001X NSW0005-001X NSW0005-001X NSW0052-001X	TACT SWITCH TACT SWITCH TACT SWITCH TACT SWITCH TACT SWITCH PUSH SWITCH	STOP REW FF PLAY EJECT OPE COVE	R SW
CN13	QGF1012F1-08X	CONNECTOR	8PIN	

6.15 MEC I/F BOARD ASSEMBLY PARTS LIST 15 SLK2078-00B 15

SL	SLK2078-00B		
Symbol No.	Part No.	Part Name	Description
CN2 CN3 CN4 CN5 CN6 CN7 CN8 CN9 CN10 CN12 CN13 CN14 CN47	QGA1201F2-03X QGA1501F2-03W QGA1501F2-03W QGA1501F2-03W QGA1501F2-04W QGA1201F2-05W QGA1501F2-02W QGA1501F2-02W QGA1501F2-02W QGA1501F2-02W QGA1501F2-02W QGA1501F2-02W	CONNECTOR	3PIN 2PIN 3PIN 4PIN 3PIN 4PIN 5PIN 4PIN 2PIN 4PIN 2PIN 4PIN 4PIN 4PIN 4PIN 4PIN
1	1		

6.16 MDA BOARD ASSEMBLY PARTS LIST 16

	K2036-00A		16	
Symbol No.	Part No.	Part Name	Description	
(When replace the I CN2 to new one wh to 2.5.2).	MDA board assembly ich use setting S201 o	, copy the marking on the MAIN board (re	on fer
	BA10393F-XE BA10358F-X BA6441FP-X	I.C.(M) I.C.(M) I.C.(M)	ROHM ROHM ROHM	
	2SC4081/QRS/-X 2SA1576A/QRS/-X	TRANSISTOR TRANSISTOR	ROHM ROHM	
D2	MA3020-X	ZENER DIODE	MATSUSHITA	
R2 R3 R4 R5 R6 R7 R9 R10	NRSA63J-103X NRSA63J-0R0X NRSA63J-073X NRSA63J-103X NRSA63J-103X NRSA63J-103X NRSA63J-474X NRSA63J-102X NRSA63J-822X NRSA63J-103X	M.G. RESISTOR	10k 1/16 0 1/16 47k 1/16 10k 1/16 56k 1/16 10k 1/16 470k 1/16 1k 1/16 8.2k 1/16 10k 1/16	W W W W W W
R12 R13 R14 R15 R16 R17 R18 R19 R20 R21	NRSA63J-103X NRSA63J-222X NRSA63J-105X NRSA63J-563X NRSA63J-274X NRSA63J-332X NRSA63J-103X NRSA63J-101X NRSA63J-103X NRSA63J-103X NRSA63J-103X	M.G.RESISTOR	10k 1/16' 2.2k 1/16' 1M 1/16' 56k 1/16' 270k 1/16' 3.3k 1/16' 10k 1/16' 10k 1/16' 10k 1/16' 10k 1/16'	W W W W W W
R22 R23 R24 R25 R26 R27 R28	NRSA63J-103X NRSA63J-102X NRSA63J-562X NRSA63J-103X NRSA63J-121X NRSA63J-121X NRS144J-R68X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	10k 1/16 1k 1/16 5.6k 1/16 10k 1/16 120 1/16 120 1/16 0.68 1/4	W W W W
C1 C4 C5 C6 C7 C8 C9 C10 C11 C12	NCB31EK-223X NCF31CZ-104X NEH71EM-476X NCB31EK-223X NCF31CZ-104X NCF31EZ-473X NCB31HK-102X NCS31HJ-471X NCF31CZ-104X NBE41CM-106X	CER. CAPACITOR CER.CAPACITOR E.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.1 16 47 29 0.022 21 0.1 16 0.047 29 1000p 56 470p 56	5V 5V 5V 6V 6V 5V 0V 6V 6V
C13 C14 C15 C16 C17 C18 C19 C20 C21	NBE21EM-105X NCB31HK-103X NCB31HK-103X NEN21HM-224X NEN21HM-224X NEN21HM-224X NCF31CZ-104X NCF31CZ-104X NCF31CZ-104X	TAN.CAPACITOR CER.CAPACITOR CER.CAPACITOR N.P.CAPACITOR N.P.CAPACITOR N.P.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR CER.CAPACITOR	0.01 5 0.01 5 0.22 5 0.22 5 0.22 5 0.1 1 0.1 1	5V 0V 0V 0V 0V 6V 6V 6V
L1	NQL124J-470X	COIL	47uH	
CN1 CN2	QGF1012F1-10X QGF1012F1-15X	CONNECTOR CONNECTOR	10PIN 15PIN	
K1	PGZ00627Z	FERRATE BEADS	K1-3	

6.17 A/C BOARD ASSEMBLY PARTS LIST 17 SLK2046-05-00B 17

OLIKE040-03 00D			
Symbol No.	Part No.	Part Name	Description
CN501	QGA1501F1-10	CONNECTOR	10PIN

6.18 M.SENS BOARD ASSEMBLY PARTS LIST 18 SLK2046-01-00B

INECTO C. COD		ے سے سے سے سے
Part No.	Part Name	Description
QGA1501C1-05	CONNECTOR	5PIN
	Part No.	Part No. Part Name

6.19 AL BOARD ASSEMBLY PARTS LIST 19 SLK2046-02-00B

Symbol No.	Part No.	Part Name	Description
PC101	ON1023	I.C(PH COUPLER)	
CN101	QGA1501F1-03	CONNECTOR	3PIN

6.20 T.FG BOARD ASSEMBLY PARTS LIST 2 0 SLK2046-03-00B 2 0

Symbol No.	Part No.	Part Name	Description
PC101	ON1023	I.C(PH COUPLER)	
CN101	QGA1501F1-03	CONNECTOR	3PIN

6.21 S.FG BOARD ASSEMBLY PARTS LIST 2 1 SLK2046-04-00B 2 1

Symbol No.	Part No.	Part Name	Description
PC301	TLP853	I.C(PH COUPLER)	
CN301	QGA1501F1-03	CONNECTOR	3PIN

6.22 B.SENS BOARD ASSEMBLY PARTS LIST 2 2 SLK2047-01-00A 2 2 2 ...

Symbol No.	Part No.	Part Name	Description
Q101	PN268-NC/P1/	TRANSISTOR	MATSUSHITA
CN101	QGA1501F1-03	CONNECTOR	3PIN

6.23 E.SENS BOARD ASSEMBLY PARTS LIST 23

SER2047-02-00A		SLR2047-02-00A	
Symbol No.	Part No.	Part Name	Description
Q201	PN268-NC/P1/	TRANSISTOR	MATSUSHITA
CN201	QGA1501F1-03	CONNECTOR	3PIN

6.25 SW2 BOARD ASSEMBLY PARTS LIST 25

CK2525-02-00A	25	
Part No.	Part Name	Description
QSW0046-001	TOGGLE SWITCH	POWER
QGA2501F1-02 QGA2501F1-03	CONNECTOR CONNECTOR	2PIN 3PIN
	Part No. QSW0046-001 QGA2501F1-02	QSW0046-001 TOGGLE SWITCH QGA2501F1-02 CONNECTOR

6.24 SW1 BOARD ASSEMBLY PARTS LIST 24 SCK2587-02-N0A(U)

S	CK2539-02-E0A	24	
Symbol No.	Part No.	Part Name	Description
IC1	TC74HC165AF-X	I.C.(M)	TOSHIBA
D1 D2 D3 D4 D5 D7 D8 D9 D10	MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X	DIODE	MATSUSHITA
D12 D13	MA143A-X MA143A-X	DIODE	MATSUSHITA MATSUSHITA
R1 R2 R3 R4 R5 R7 R8 R9 R10	NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-23X NRSA63D-223X NRSA63D-223X NRSA63D-223X NRSA63D-123X NRSA63D-133X NRSA63D-103X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	22k 1/16W 22k 1/16W 22k 1/16W 22k 1/16W 330k 1/16W 22k 1/16W 22k 1/16W 22k 1/16W 18k 1/16W 10k 1/16W
R12	NRSA63D-562X	M.G.RESISTOR	5.6k 1/16W
C1	NCB31CK-473X	CER.CAPACITOR	0.047 16V
S1 S2 S3	QSW0048-001 QSW0189-001Z QSW0052-004	TOGGLE SWITCH PUSH SWITCH TOGGLE SWITCH	ZEBRA VTR TRIG A.FOCUS/WHITE
CN7 CN8 CN10	QGA1201C2-10X QGA1201C2-12X QGA1201C2-05X	CONNECTOR CONNECTOR CONNECTOR	10PIN 12PIN 5PIN
K1	SCV2662-027	FERRITE BEADS	K1-10
TB1	PGZ02228	EARTH LUG	
VA1	QAF0025-220	VARISTOR	

6.26 SW3 BOARD ASSEMBLY PARTS LIST 2 6 SCK2525-03-00A 2 6 ...

Symbol No.	Part No.	Part Name	Description
S1	QSW0189-001Z	PUSH SWITCH	VTR TRIG2
CN21	QGA1501F1-02	CONNECTOR	2PIN

6.27 SW4 BOARD ASSEMBLY PARTS LIST 2 7 SCK2525-04-00A 2 7 ...

3CK2929-U4-UUA				اللال اللال
Symbol No.	ymbol Part No. Part Name		. Part Name Descrip	
D1 D2 D3 D4 D5 D6	MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X MA143A-X	DIODE DIODE DIODE DIODE DIODE DIODE DIODE	MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA	
R1 R2 R3 R4 R5 R6 R7	NRSA02J-222X NRSA02J-222X NRSA02J-222X NRSA02J-222X NRSA02J-222X NRSA02J-222X NRSA02J-222X NRSA02J-222X	M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR M.G.RESISTOR	2.2k 2.2k 2.2k 2.2k 2.2k 2.2k 2.2k 2.2k	1/10W 1/10W 1/10W 1/10W 1/10W 1/10W 1/10W
C1	NCF21HZ-104X	CER.CAPACITOR	0.1	5 0 V
S1	QSW0048-001	TOGGLE SWITCH	S1- 4	
CN21	QGA1501F1-12	CONNECTOR	12PIN	

6.28	SW5 BOARD ASSEMBLY PAR	TS LIST 28
	SCK2526-03-00A	28

00112320-00 00A			
Symbol No.	Part No.	Part Name	Description
S1	NSW0070-002X	SLIDE SWITCH	S1,2/AUDIO 1,2
CN39	QGA1201F2-05X	CONNECTOR .	5PIN
		:	
		1	

6.31 TC.OUT BOARD ASSEMBLY PARTS LIST 3 1 SCK2525-10-00A 3 1

31	JK2525-10-00A		
Symbol No.	Part No.	Part Name	Description
CN34	QGA1501C1-04	CONNECTOR	4PIN
K1	SCV2662-027	FERRITE BEADS	K1,2

6.29 SW6 BOARD ASSEMBLY PARTS LIST 2 9 SCK2526-04-00A 2 9 ...

Symbol No.	Part No.	Part Name	Description
S1	QSW0339-001	SLIDE SWITCH	CAM/VTR
CN60	QGA1201F2-02X	CONNECTOR	2PIN

6.32 EAR BOARD ASSEMBLY PARTS LIST 3 2

	32
SCK2525-05-00A	1311211 11 11 11 11 11
30K2323-03-00A	السالب السالب السالب

Symbol No.	Part No.	Part Name	Descrip	otion
C1 C2	NDC21HJ-181X NDC21HJ-181X	CER.CAPACITOR CER.CAPACITOR	180p 180p	50V 50V
J15	QNS0095-001	3.5 JACK	EAR PHONE	
CN27	QGA1501F1-04	CONNECTOR	4PIN	

6.30 TC.IN BOARD ASSEMBLY PARTS LIST 3 0 SCK2525-09-00A 3 0

CORECES			
Symbol No.	Part No.	Part Name	Description
CN37	QGA1501C1-02	CONNECTOR	2PIN
K1	SCV2662-027	FERRITE BEADS	K1,2

6.33 LI.BATT BOARD ASSEMBLY PARTS LIST 33 SCK2535-03-00A 33 C

CN38 CN801 YQ44288-1-1 CN802 YQ44289-1-1 CONNECTOR CONNECTOR 1PIN 1PIN 1PIN

6.34 GEN.IN BOARD ASSEMBLY PARTS LIST 3 5 SCK2525-08-00A 3 5

-		•		
Symbol No.	Part No.	Part Name	De	scription
R1 R2	NRSA02J-750X NRSA02J-0R0X	M.G.RESISTOR M.G.RESISTOR	75 0	1/10W 1/10W
CN58	QGA1501C1-03	CONNECTOR	ЗРІМ	
K1	SCV2662-027	FERRITE BEADS		
		-		

6.37 CN BOARD ASSEMBLY PARTS LIST 38

SCK2542-02-00A			38
Symbol No.	Part No.	Part Name	Description
CN26	QGA1201C2-06X	CONNECTOR	6PIN

6.35 MON.OUT BOARD ASSEMBLY PARTS LIST 3 6 SCK2525-11-00A 3 6

SCR2525-11-00A				
Symbol No.	Part No.	Part Name	De	escription
CN59	QGA1501C1-02	CONNECTOR	2PIN	
K1 K2	NRSA02J-0R0X NRSA02J-0R0X	M.G.RESISTOR M.G.RESISTOR	0 0	1/10W 1/10W

6.38 MEMORY BOARD ASSEMBLY PARTS LIST 40 SCK2542-01-00A 40

SCK2542-01-00A			40	
Symbol No.	Part No.	Part Name	Description	
IC1	NM93С86AEM8-X	I.C.(M)	NATIONAL SEMICO	
D1 D2 D3 D4 D5	MA143A-X MA143A-X MA143A-X MA143A-X HZM6C-X	DIODE DIODE DIODE DIODE ZENER DIODE	MATSUSHITA MATSUSHITA MATSUSHITA MATSUSHITA HITACHI	
R1 R2	NRSA63D-101X NRSA63D-223X	M.G.RESISTOR M.G.RESISTOR	100 1/16W 22k 1/16W	
C1	NCB31CK-104X	CER.CAPACITOR	0.1 16V	
J13	QNZ0259-001	PLUG(6P)	6PIN	

6.36 RM BOARD ASSEMBLY PARTS LIST 3 7 SCK2525-06-00A 3 7

3(CKZ5Z5-U0-UUA		3//	
Symbol No.	Part No.	Part Name	Part Name Descriptio	iption
C1	NDC21HJ-820X	CER.CAPACITOR	82p	50V
J16	QNS0095-001	3.5 JACK	REMOTE	
CN40	QGA1501F1-03	CONNECTOR	3PIN	

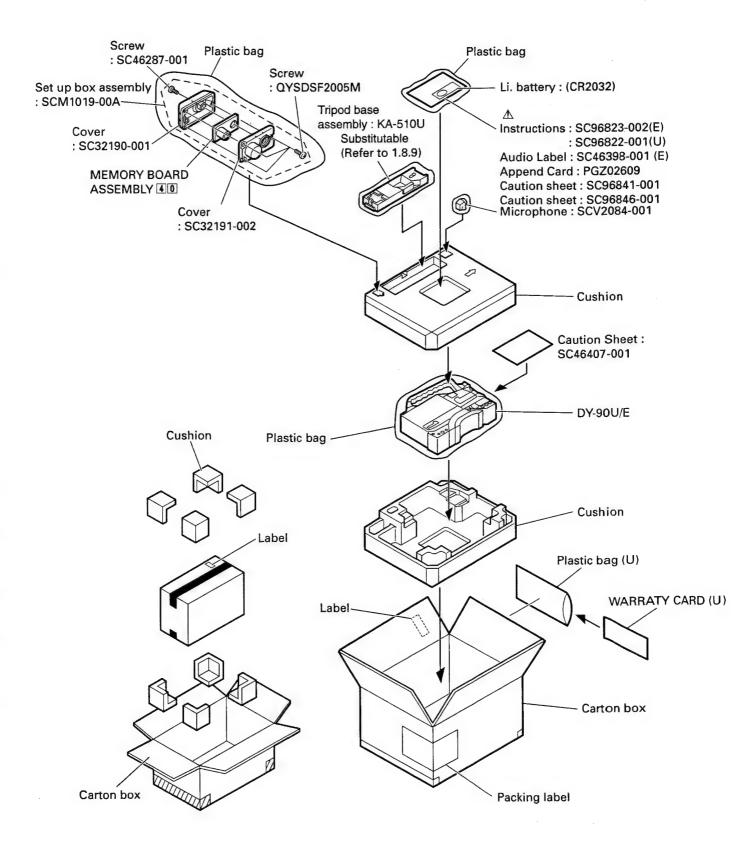
6.39 MIC2 BOARD ASSEMBLY PARTS LIST 41 SCK2570-01-00A 41

Symbol No.	Part No.	Part Name	Description
LC1	ZJSC-2R2-101	LC FILTER	LC1,2
CN28 CN61	PGZ02149-103Z PGZ02149-104Z	CONNECTOR CONNECTOR	3PIN 4PIN
K1	PGZ00354	FERRATE BEADS	K1,2

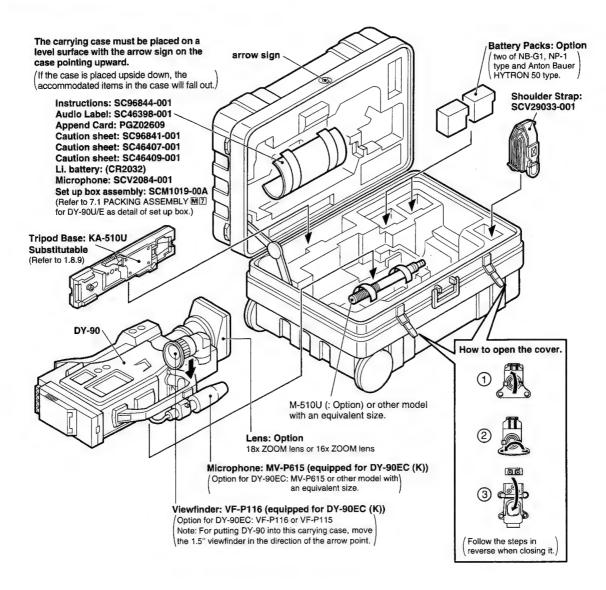


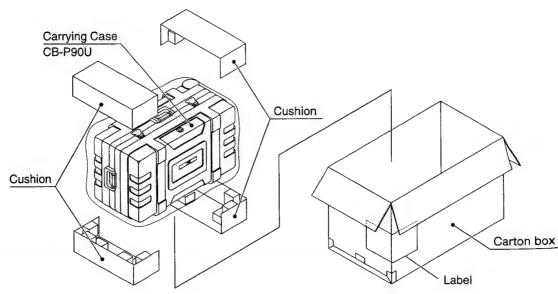
SECTION 7 PACKING

7.1 PACKING ASSEMBLY M 7 for DY-90U/E



7.2 PACKING ASSEMBLY M 7 for DY-90EC/EC (K)





7.3 SW & VR SETTING

7.3.1 SW & VR setting for DY-90E/EC/EC (K)

: Setting Switch and VR Name Setting at shipment **OP FILTER** 1.3200K 2.5600K + 1/4ND 4.5600K + 1/16ND 3.5600K **POWER** OFF ON VTR STBY SAVE **GAIN** Μ Н OUTPUT (A. KNEE) CAM/ON CAM/OFF BAR/ON WHT. BAL **PRST** В **AUTO IRIS** NORMAL STOP L BACK L **COMPRESS BLACK** STRETCH NORMAL **SHUTTER** OFF ON V. SCAN В OFF FILE Α **ZEBRA** ON OFF **AUD1 INPUT SELECT** MIC +48V ON LINE MIC **AUD2 INPUT SELECT** MIC MIC +48V ON LINE VTR MONITOR OUT SELECT CAM **AUDIO DISPLAY** DA1/DA2 DA3/DA4 LIGHT ON OFF TC COUNTER CTL UB MIC SELECT (2/1L) AUTO MANUAL MIC SELECT (1R) AUTO MANUAL MIC SELECT MIC 1 MIC 2 AUTO MANUAL AUDIO SELECT (AUD. 1) AUDIO SELECT (AUD. 2) AUTO MANUAL TC GENERATOR PRESET REGEN TC GENERATOR REC **FREE** TC DISP TC SUB TC MONITOR LEVEL ALARM LEVEL MIC. REC. LEVEL 1/L Center MIC. REC. LEVEL 2/R AUDIO LEVEL DA1 **AUDIO LEVEL DA1** H. PHASE SC FINE Setting by adjustment SC COARSE

7-3

7.3.2 SW & VR setting for DY-90U

			: Setting	
Switch and VR Name	Se	etting at shipmer	nt	
OP FILTER	1.3200K 2.5600K			
	3.5600K + 1/16 ND	EFFECT (CROS	SS)	
POWER	ON	OFF		
VTR	STBY	SAVE		
GAIN	L	М	Н	
OUTPUT (A. KNEE)	CAM/ON	CAM/OFF	BAR/ON	
WHT. BAL	В	. A	PRST	
AUTO IRIS	BACKL	NORMAL	STOP L	
BLACK	STRETCH	NORMAL	COMPRESS	
SHUTTER	ON	V. SCAN	OFF	
FILE	Α	В	OFF	
ZEBRA	ON	OFF		
DA1 INPUT SELECT	LINE	MIC	MIC +48V ON	
DA2 INPUT SELECT	LINE	MIC	MIC +48V ON	
MONITOR OUT SELECT	VTR	CAM		
AUDIO DISPLAY	DA1/DA2	DA3/DA4		
LIGHT	ON	OFF		
COUNTER	CTL	TC	UB	
DA1 AUDIO MODE SELECT	AUTO	MANUAL		
DA2 AUDIO MODE SELECT	AUTO	MANUAL		
DA3 AUDIO MODE SELECT	AUTO	MANUAL		
DA4 AUDIO MODE SELECT	AUTO	MANUAL		
TC GENERATOR	PRESET	REGEN		
TC GENERATOR	REC	FREE		
TC DISP	TC	SUB TC		
MONITOR LEVEL				
ALARM LEVEL				
DA1 AUDIO LEVEL]			
DA2 AUDIO LEVEL		Center		
DA3 AUDIO LEVEL				
DA4 AUDIO LEVEL		****		
H. PHASE				
SC FINE	Setting by adjustment			
SC COARSE				

SECTION 8 TECHNICAL INFORMATION

8.1 COMPARISON WITH PREVIOUS MODEL

8.1.1 Camera Section

Specifications	KY-D29	DY-90 Camera Section		
Image pickup device	2/3", 3-IT CCD	2/3", 3-IT CCD		
Effective pixels	768H x 493V	768H x 493V		
Sensitivity	F11, 2000 lux	F11, 2000 lux		
Color temperature conversion filters	3200K, 5600K, 5600K + 1/16 ND, effect (cross) filter	[U version]: 3200K, 5600K, 5600K + 1/16 ND, effect (cross) filter [E version]: 3200K, 5600K, 5600K + 1/4 ND, 5600K + 1/16 ND		
Minimum object illumination	0.35 lux (with Super Lolux)	0.75 lux (with Super Lolux)		
S/N	65 dB (DNR ON)	_		
Horizontal resolution	850 TV lines	_		
Contour correction	H: Bothways V: Bothways	H: Bothways V: Bothways		
Color bar signal	SMPTE color bars	SMPTE color bars		
White balance	Preset/AW1/AW2/(FAW)	Preset/A/B/(FAW)		
Electronic shutter	1/60, 1/100, 1/250. 1/1000, 1/2000, V.SCAN	1/60, 1/100, 1/250, 1/1000, 1/2000, V.SCAN		
Gain boost	-3/0/6/9/12/18 dB, ALC	-3/0/6/9/12/18 dB, ALC		
Functions	KY-D29	DY-90 Camera Section		
Full-auto shooting (FAS)	Provided	Provided		
Variable scanning (V.SCAN) Lolux	60.5 Hz to 249.7 Hz Lolux: +33 dB gain boost Super Lolux: +39 dB gain boost	60.5 Hz to 249.7 Hz Lolux: +33 dB gain boost		
High-resolution function	Normal: 380 TV lines (V resolution) V. Plus: 420 TV lines V. Max: 450 TV lines	Normal: 380 TV lines (V resolution) V. Plus: 420 TV lines V. Max: 450 TV lines		
Accu-focusing function	Built in	Built in		
Smooth transition function	Built in	Built in		
Black stretching function	Built in	Built in		
Black compression function	Built in	Built in		
Auto knee function	ON/OFF switchable (menu driven)	ON/OFF switchable (switch provided)		
DNR (Digital Noise Reduction)	Built in	_		
White flaw correction	Built in	Built in		
Detail H/V balance setting (DTL. H/V BAL.)	Built in	Built in		
Detail enhancement frequency setting (DTL. FREQUENCY)	LOW, MIDDLE, HIGH, AUTO	LOW, MIDDLE, HIGH		

Table 8-1-1 Comparison with Previous Model

8.1.2 VCR Section

Specifications/Functions	BR-D40	DY-90 VCR Section
Format	Digital-S	Digital-S
Tape width	12.65 mm	12.65 mm
Tape speed	57.737 mm/sec. (NTSC) 57.795 mm/sec. (PAL)	57.737 mm/sec. (NTSC) 57.795 mm/sec. (PAL)
Recording/play time	104 minutes (with a DS-104 cassette)	104 minutes (with a DS-104 cassette)
Power consumption	22W (BR-D40 in recorded mode)	30W (in recorded mode with camera)
Video		
Frequency response	Y: 5 MHz, R-Y/B-Y: 2 Mhz	Y: 5 MHz, R-Y/B-Y: 2 Mhz
S/N	52 dB (during BR-D80/D50 reproduction with component output)	52 dB (during BR-D80/D50 reproduction with component output)
Resolution	410 lines	410 lines
Audio		
Number of channels	PCM x 2, cue track x 2	PCM x 4, cue track x 2
Mic-1 input	None	-52 dBs, unbalanced, 6-pin
Mic-2 input	-60 dBs, balanced, XLR 3-pin	–60 dBs, balanced, XLR 3-pin
Line input	$+4$ dB, 10 k Ω , balanced	$+4$ dB, 10 k Ω , balanced
	-60 dB, 3 kΩ, balanced	–60 dB, 3 k Ω , balanced
Output	–6 dBs, low impedance, unbalanced (RCA)	0 dBs, low impedance, balanced (XLR5)
Sampling frequency	48 kHz	48 kHz
Quantization	16-bit	16-bit
Frequency response	20 Hz to 20 kHz (PCM)	20 Hz to 20 kHz (PCM)
Dynamic range	85 dB (PCM) (during BR-D80/D50 reproduction)	80 dB (PCM) (during BR-D80/D50 reproduction)
Wow & flutter	below measurable limit	below measurable limit

Table 8-1-2 Comparison with Previous Model

8.1.3 Circuit Layout

A comparison of circuit layouts is shown in Figures 8-1-1 (a) and (b).

In the case of a combination of KY-D29 and BR-D40, the transmission of the video signal has been carried out as its analog component. The signal from the camera section's CCD is converted to a digital signal. The signal digitally processed at the camera section is then returned to an analog signal by the D/A converter and sent to the VCR circuit. The signal is again digitalized by means of the A/D converter in the BR-D40. In the DY-90, however, the digital component signal is transmitted and received unchanged in order to avoid picture degradation. This allows a reduction of the number of A/D and D/A converters as well as the sharing of encoders between the different circuit sections, leading to energy saving and a lighter weight of the unit.

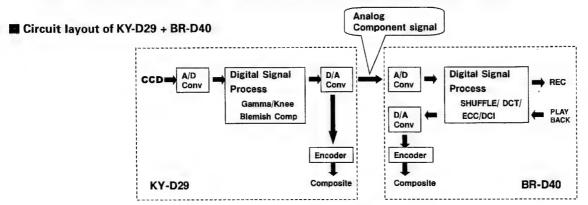


Fig. 8-1-1 (a)

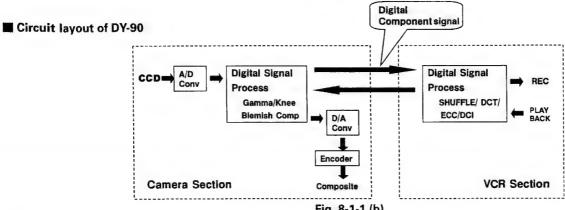


Fig. 8-1-1 (b)

8.2 DESCRIPTION OF NEW CIRCUITRY (CAMERA SECTION)

8.2.1 Video Processor Circuit in the Camera Section

The video processor circuit of this unit features a more simplified design than in previous cameras. When the circuit is seen from the viewpoint of signal flow in the camera circuitry, it roughly consists of three types of PC board. (Fig. 8-2-1)

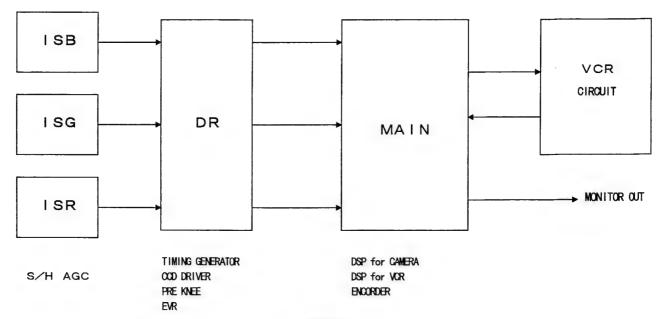


Fig. 8-2-1

The processor circuitry in the previous camera head was composed of the three circuit boards for TG (Timing Generator), DR (Driver) and PA (Pre-Amplifier), but this new unit combines the circuitry in a single DR board. This has made it possible to re-

duce the number of circuit boards and the component count with a consequent reduction of the CCD temperature rise thanks to the elimination of the circuit boards from the vicinity of the CCD.

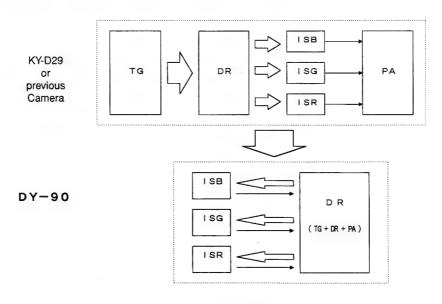


Fig. 8-2-2

(1) IS board

The circuitry in the IS board optimizes the clamping and sampling time constant by using a sample & hold circuit, which is an improvement on the previous CDS (Correlated Double Sampling) circuit, and improves the S/N by including the gain boost circuit

which has previously been located in the PA board. While the KY-D29 performed the feedback black clamping inside the IS board, this unit detects the black level at the DR board and feeds back the control signal to the IS board.

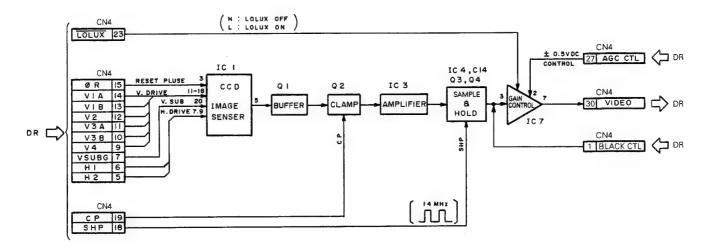


Fig. 8-2-3

(2) DR board

The DR board is implemented by unifying the functions which have previously been divided into three. The circuit design for each function is based on that used with the previous model KY-D29, but the new circuit is composed of simplified video circuitry and EVR-related circuitry.

The video-related signal processing circuitry includes the pre-

knee circuit which is indispensable for expressing a dynamic range of 600%, the detector circuit for the feedback black clamping (mentioned above) and the signal processor circuit related to the basic video performance parameters such as flare, M.BLACK and B.PAINT.

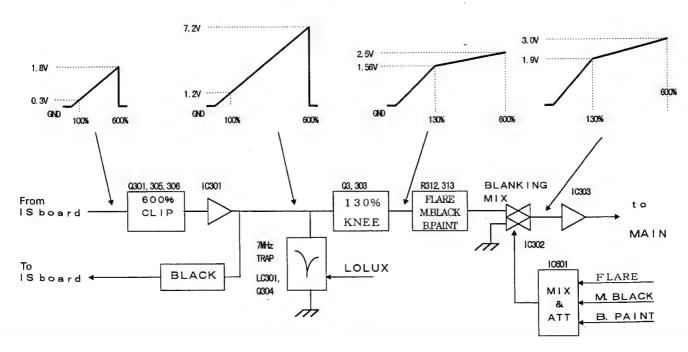


Fig. 8-2-4

(3) MAIN board (Camera-related signal processing)

In the MAIN board, the digital signal processing of the camera and that of the VCR are implemented in a single circuit board to minimize the transfer distance of digital signals, achieving an ideal digital-to-digital interfacing.

Among the range of wire functions of the MAIN board, the fol-

lowing description will focus on the processing of digital signals related to the camera. Among the 10 circuit diagrams of the MAIN board in this manual, those covering the camera-related functions are shown in pages 1, 2 and 3.

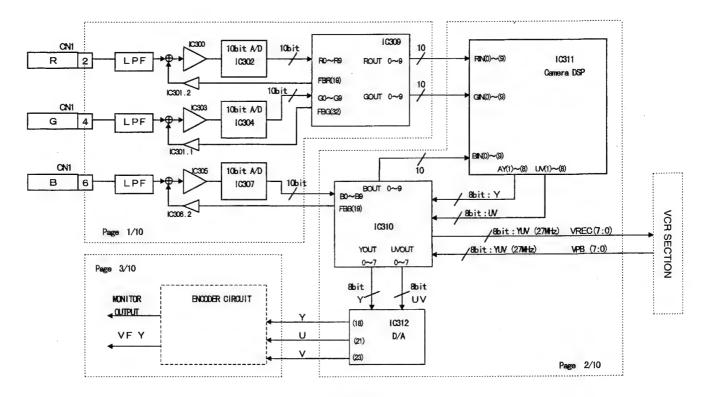


Fig. 8-2-5

The input R/G/B analog signals pass through the LPFs, then their black levels are clamped and converted into digital signals by 10-bit A/D converters. The digitally-converted signals of the R/G

CH are sent to IC309 and the digitally converted signal of the B CH is sent to IC310. These ICs perform the feedback lamp signal detection and the shading correction operations inside them.

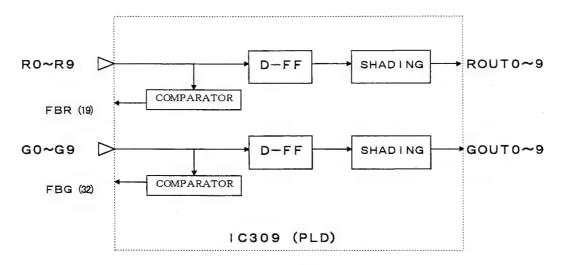


Fig. 8-2-6

The R/G/B digital signals output from the IC309 and IC310 are input into the main DSP (IC311) of the camera block. This camera DSP has the specifications and executes internal processing operations as listed below.

[Specifications]

- ♦ CMOS gate array: 0.35 μm rule, 330k gate
- ◆ 176-pin plastic QFP
- ◆ 3.3 V-drive: Power consumption below 300 mA
- ◆ Input signals: R/G/B, 10 bits each. Output signals: Y/UV, 9 bits each.
- ◆ Internal operations: Compatible with up to 14-bit width

[Functions]

- ◆ White flaw detection and correction
- ◆ DETAIL circuit
- ◆ Color matrix circuit
- ◆ Gamma correction
- ♦ Y/UV matrix processing
- ◆ Black stretch/compression circuit
- ◆ Knee (Auto knee)/white clipping

- ◆ Peak, APL and NAM detection circuits
- ◆ Color bar generator circuit
- * These internal processing functions are basically identical to those which were digitalized with the KY-D29, but this gate array has been newly designed based on expertise obtained through the previous design.
- * The color matrix allows the user to reproduce the desired color tones by fine-adjusting nine parameters. (As the default values of the color matrix have been set based on a detailed examination and evaluation of color reproduction at the time of development, we believe that they usually do not need modification. If the color matrix is to be re-adjusted based on a user request, etc., the use of a color chart and vector scope is required. See section 1.8.10 for the adjustment procedure.)

The use of the newly developed DSP has achieved a reduction in the size and power consumption of the circuit board.

The internal processing block diagram of the DSP is shown be-

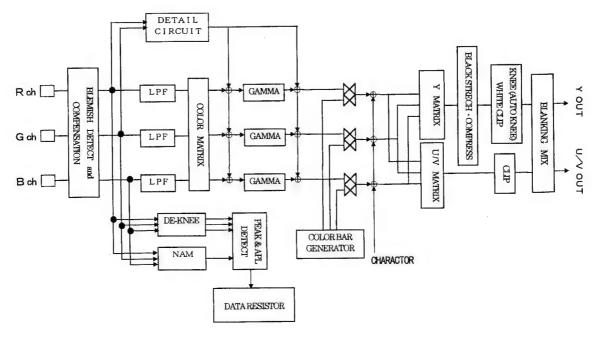


Fig. 8-2-7

The output signal format of the camera DSP is based on the Y (13.5 MHz) and UV mixed (13.5 MHz) signals. The signal sequence is shown below.

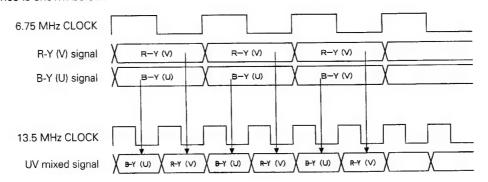


Fig. 8-2-8

Inside the IC310, the Y and UV signals are mixed to a YUV mixed (27 MHz) signal which interfaces with the Digital S VCR.

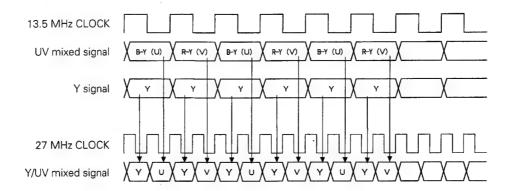


Fig. 8-2-9

The IC310 also includes a function for switching between the DSP input signals and the play (EE) signals and a circuit for synthesizing/decomposing the YUV mixed signals.

The IC309 and IC310 constituting the MAIN board use PLDs (Programmable Logic Devices) manufactured by ALTERA. The internal program of the IC is downloaded from the IC3 (ROM) of the CP board every time the power is turned on.

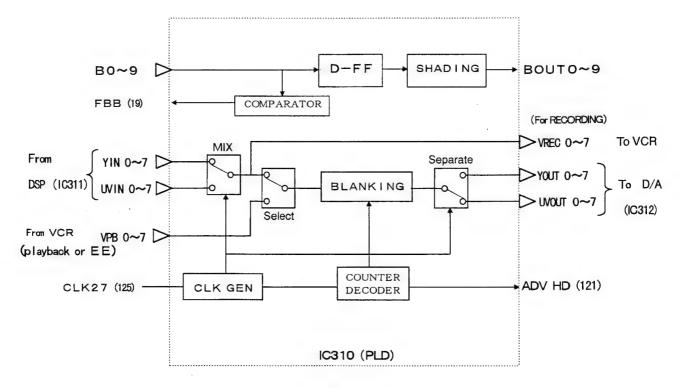


Fig. 8-2-10

8.2.2 Signal Processing in DSPIC (MAIN board IC311)

See Fig. 8.2.7 for the entire block diagram of DSPIC.

(1) "Detail" Signal Processing

The signal processing for this unit which takes place at the "Detail" signal generating and composing block of the camera DSP is different from the conventional signal processing. Details of the procedure will be given below.

The "Detail" signal generation and composing block in the DSP illustrated below.

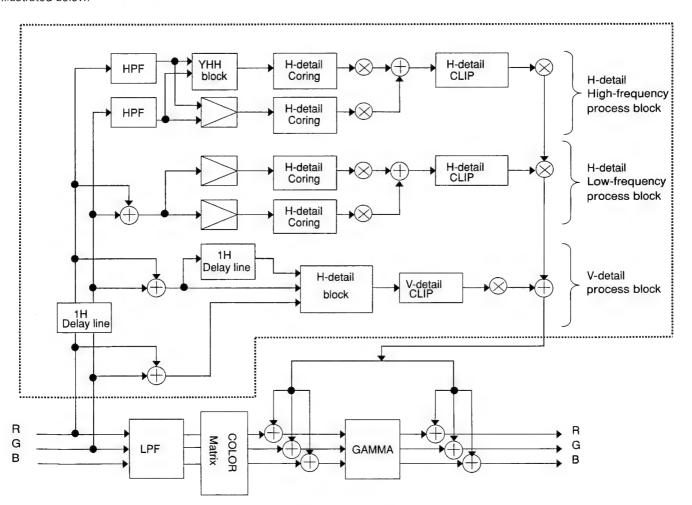


Fig. 8-2-11

H/V "detail" signals are generated from the Rch and Gch signals before passing through the color matrix circuit. The H-detail signal is separated between the high-frequency range and low-frequency range using the HPF to enable choosing a frequency range where the signal intensity is controlled and boosted. In the H-detail signal processing block, the frequency range is further separated into 4 sections where boosting intensity can be controlled. The mid frequencies of those frequency ranges are given below.

(When driven by a 13.5 MHz clock)

H – detail High Frequency : H 10.125MHz
H – detail High Frequency : L 6.75MHz
H – detail Low Frequency : H 3.75MHz
H – detail Low Frequency : L 1.875MHz

The generated "Detail" signals are added together. Half of the resulting sum is mixed with the line signals (R/G/B) prior to gamma correction processing and the other half with the line signals after gamma correction. This way, only half of the mixed "detail" signals is subjected to gamma correction processing, ensuring more natural-fit frequency characteristics than before. However, you may feel that the "Detail" signal is somehow too weak in dark area. This is because in the previous system the "Detail" signals in a dark area have been excessively intensified because the "Detail" signal components are amplified by letting them pass through the gamma correction circuit togther. In the present design, each half of the "Detail" signal components is added to line signals before and after the gamma correction circuit, so that they are less subjected to amplification with the gamma correction circuit.

(2) Color Matrix Circuit

The DSP of this unit includes a color matrix circuit for a finely defined color reproduction. Color reproduction characteristics can be altered and adjusted by controlling the color signal components separated as illustrated below in terms of the nine parameters.

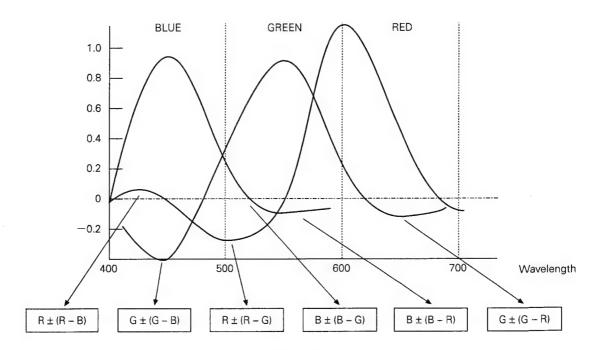


Fig. 8-2-12

(3) Data Detection Required for Auto Control Systems

In conventional cameras, the data required for controlling the auto control systems such as Auto White and Auto Balance have been generated and detected using the analog signal processing circuit in the CP board and then loaded into the CPU. Now in this unit, the DSP IC incorporates these facilities in itself and able to store the result of data calculation.

The CPU then loads the data in it as required.

This unit is also equipped with the DE-KNEE circuit which extends the signal compressed by the PRE-KNEE before calculating the PEAK/APL data of R/G/B.

It thus ensures a more accurate calculation of auto iris values for a very bright subject.

^{*} See Section 1.15 for details of the color matrix adjustment.

8.3 VIDEO SYSTEM

8.3.1 Video Circuit

(1) Signal flow

Fig. 8-3-1 shows the flow of signals in the video circuitry.

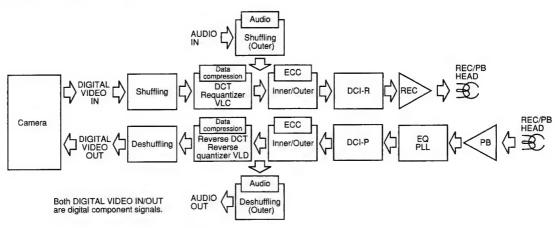


Fig. 8-3-1 (a) Video Signal Processing Flow

(2) Operation of each block

1) Input signals

The digital component video signals from the camera are input directly into the shuffling IC. While the BR-D40 incorporates A/D and D/A converters in this block to convert signals between analog and digital, the DY-90 transmits the signal in its original digital form in order to allow recording and playback without altering the video quality. Refer fig.8-3-1(b).

The input signal is based on the Digital-S format. It consists of digital component (4:2:2) signals with which Y = $13.5\,\text{MHz}$, B-Y/R-Y = $6.75\,\text{MHz}$ and quantization bits of 8 bits. However, the Y, B-Y and R-Y signals are multiplexed into a single signal, which is transmitted at twice the frequency of the Y signal, i.e. at 27 MHz. The number of effective pixels and lines per frame are identical to the previous design.

The data rate per second is as follows.

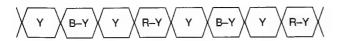
NTSC: 720 (H) x 480 (V) x 2 (Y&C) x 8 (bits) x 30 (frames)

≒166 Mbps.

PAL : 720 (H) \times 576 (V) \times 2 (Y&C) \times 8 (bits) \times 25 (frames)

≒166 Mbps.

Input signal: Mixture of Y/C, transmitted at high 27 MHz rate.



8 bit / 27 MHz

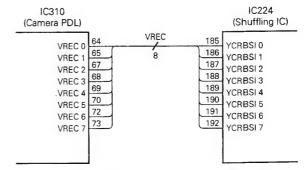


Fig. 8-3-1(b) Signal interface

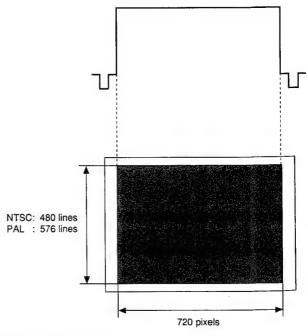


Fig. 8-3-1(c) Input signal from camera

2) Shuffling

The purpose of shuffling is to distribute data contained in five macroblocks equally among them that are used as a unit of fixed length data as well as to make data distortion caused by compression inconspicuous. Concretely, five macroblocks that are unitized as mentioned below are collected from various points of a picture according to a prescribed rule for shuffling.

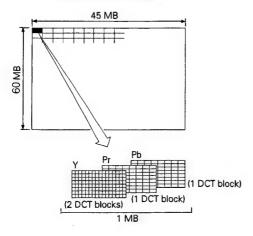
a) DCT block

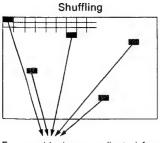
Prior to shuffling, data for one frame is splitted into 8x8 pixel blocks (called DCT blocks), each of which is a basic unit of DCT. Since there is a difference in sampling frequency between Y signal and color difference signal, Y signal is splitted into $60(V) \times 90(H)$ blocks while color difference signal is splitted into $60(H) \times 45(H)$ blocks for NTSC and Y signal is splitted into $72(V) \times 90(H)$ blocks while color difference signal is splitted into $72(V) \times 45(H)$ blocks.

b) Macroblock

One macroblock is composed of four DCT blocks in the same position of a picture. Detail of four DCT blocks is two DCT blocks of Y signal and two DCT blocks of each color difference signal (Pb or Pr). Concealment of ECC is carried out at a unit of macroblock.

Construction of picture





5 macroblocks are collected from various points of a picture and they are compressed to be a specified amount of data. This operation disperses data distortion caused by compression equally among theses macroblocks.

As continuous 5 macroblocks in a picture are uniformly formed into fixed length data of the same bits, distortion of data occurs in detail image portions. Shuffling not only controls occurrence of such distortion but also disperses distortion to make it inconspicuous.

3) Data compression

video data is compressed into 50 Mbps or 1/3.3 (50/166 Mbps) by high degree mathematical processing such as DCT (Discrete Cosine Transform), requantization, VLC (Variable Length Coding).

a) DCT (Discrete Cosine Transform)

DCT is a mathematical transformation theory utilized for DC-AC conversion of pixel value into frequency area. Since there is redundant data between neighboring pixels, DCT transforms pixel value into frequency area by DC-AC conversion. As a result, widely dispersed signal power can be concentrated in low frequency components which can easily be compressed.

Transformation of video data by DCT is carried out at a unit of DCT block, and transformed data are scanned zigzag as shown by Fig. 8-3-1. Since a plenty of zero values are detected as a result of the above-mentioned zigzag scan, code length can be shortened by the run length coding to be mentioned later.

b) Requantization

Requantization reduces amount of video data with little deterioration in picture quality, because low frequency components which signal power concentrate in are quantized fine while high frequency components which signal power is not dispersed in are quantized roughly.

In the requantization process, DCT output is splitted into four areas, which are respectively quantized by different quantizing steps. Quantizing step for each area is determined so that total amount of data of 5 macroblocks collected by shuffling fits in the specified amount. However, DC components are not requantized because they are important data.

c) VLC (Variable Length Coding)

Average code length can be shortened as a whole by allotting short code to high frequent matters and long code to low frequent matters. This coding method is called Variable Length Coding (VLC). The variable length coding adopted for the DIGITAL S format is constructed based on the Haffman coding in combination with the run length coding.

• Run length coding

The run length coding, which is an efficient method to code data of "0" that is apt to appear continuously, transforms data into groups which consist of continuous "0" data and data other than "0" following continuous "0" data.

· Haffman coding

Haffman coding can shorten total code length because it allots short length code to frequently appearing groups (consisting of continuous 0's and following data other than 0) processed by the run length coding.

DCT:

The screen is divided into blocks (8 x 8 pixels). DCT means obtaining conversion coefficient that shows how much of predetermined picture pattern (64 pictures) is contained in each block.

DCT feature:

Eventhough the coefficient values for fine pictures are deleted, picture degradation is low when compared with other compression methods and fast processing (from conversion to compression) is possible. (Especially, the lower compression ratio of 1:3.3 adopted by DIGITAL S can ignore the possible picture deterioration.)

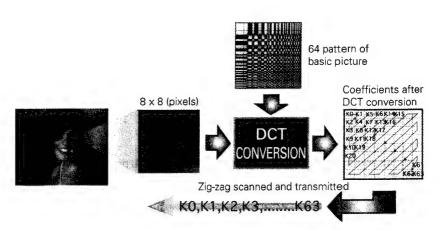


Fig. 8-3-1 (e) DCT conversion

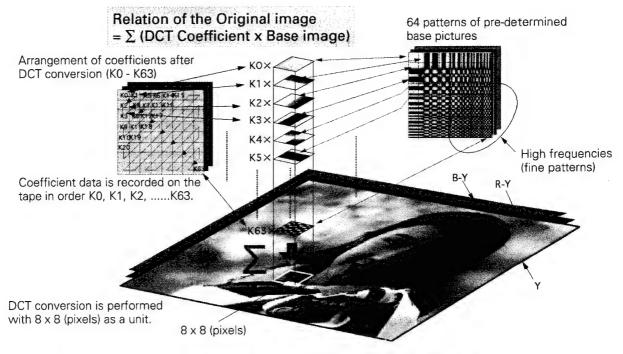


Fig. 8-3-1 (f) Relation of the Original image = Σ (DCT Coefficient x Base image)

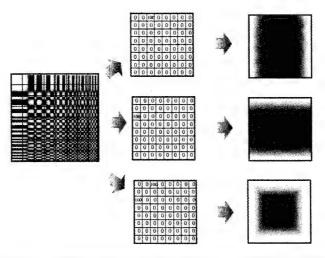


Fig. 8-3-1 (g) Actual image pattern by means of DCT coefficient

4) ECC (Error Correction Code)

If digitized recording signal is affected by noise, dust on tape or something other, PB signal may possibly differ from the recording signal. Therefore, digital VCR generally adds error correction code to recording signal and plays back the recording signal after correcting errors in recording signal by the correction code.

The DIGITAL S VCR adopts the Reed-Solomon product coding that demonstrates high ability to correct both random error and burst error (sequent errors) for the video and audio systems.

Video: Inner - RS (85, 77), Outer - RS (149, 138) Audio: Inenr - RS (85, 77), Outer - RS (14, 9)

The first number in parenthesis shows code length and the second number shows amount of data. Difference between these two numbers corresponds to number of parities.

If error that cannot be corrected occurs in audio, it gives incongrous feeling to the listener as audio's peculiar characteristic. Therefore, redundancy of audio's outer parity is increased to raise the correction ability.

5) DCI

DCI rearranges video data, audio data and other data to be recorded on tape so as to meet the DIGITAL S format. As a result of this reformatting, video and audio data for a frame are divided into sectors by every 20 video data and every 5 audio data (for a channel).

Moreover, DCI modulates data of track format as mentioned below, and the modulated data are converted from parallel data to serial data before it is sent to the REC amplifier.

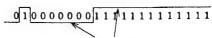
Modulation (Channel coding)

Prior to recording of digital signal on tape, the recording data column is converted so that it conforms to the digital recording/playback system, however, operation of this conversion depends on the recording/playback characteristics of magnetic tape and machine being used, recording data rate, and so on.

Although rotary transformer is generally used as a means to send signal to the rotary drum in the digital VCR, it is weak in sending a digital signal that contains continuous "0" or "1" data because there are much DC components in such the signal. On the other hand, it is needed to generate a clock synchronizing with playback signal by a PLL circuit for obtaining playback data. For generating and supplying this clock stably, it is also required to reduce continuity of "0" or "1" data in length. From a viewpoint of recording density, data pattern consisting of repetitive "0" and "1" is undesirable because repetition of "0" and "1" brings the severest recording/playback condition.

Channel coding of the DIGITAL S VCR is basically operated by SI-NRZI (scrambled interleaved non-return zero inverted) and 24-25 modulation.

As a result of the above-mentioned operation, data conversion is performed so that "0" and "1" are arranged suitably for adding sync signal and for recording/playback.



DC components

If recording data contains a lot of continuous 0's and 1's, a great deal of DC components are generated and the rotary transformer hardly transmits signal to the drum. Moreover, it is hard to read signal out because of difficulty in bit synchronization.



NSNSNSNSNSNSNS

If recording data contains alternate repetition of "0" and "1", recording frequency becomes high and it is hard to read signal out.

Fig. 8-3-1 (h)

6) EQ/PLL

Fig. 8-3-1 (i) shows the block diagram of the EQ/PLL circuit. The pre-filter, equalizer and 1+D circuits shape the amplitude and phase characteristics of the reproduced signal and make the distinction between "1" and "0" easy. The PLL circuit generates the clock in synchronization with the reproduced signal and returns it to the original digital signal.

a) Eye pattern

Since the digital-S format employs scrambled, interleaved NRZI modulation, its waveform becomes as shown in Fig. 8-

3-1 (e). The reproduced waveform is variable depending on the modulation system, but it is usually called the eye pattern because it has the shape of eyes. When the head is dirty, tracking is deviated or the reproduced RF waveform fluctuates or contains jitter, the opening (aperture ratio) of the eyes is decreased; in this case, the digital data cannot be identified and the error rate will deteriorate. When the error rate deteriorates to a level that cannot be corrected by the ECC circuit, block noise will be observed in the reproduced picture.

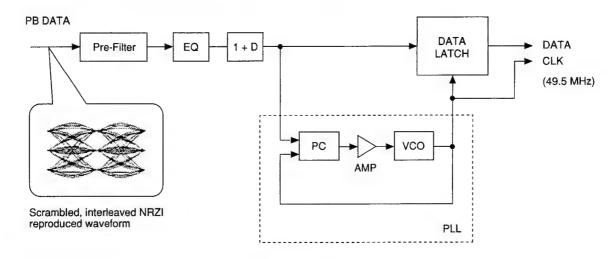


Fig. 8.3.1 (i)

b) Waveform equalization (1+D)

The circuit formed by IC303 to IC304 in the SS/RFP schematic diagram is the 1+D circuit. With the digital videotape recording, the reproduction characteristics of the lowest and the highest frequencies tend to deteriorate most. The low-frequency characteristic deterioration is produced by the reproduction of differential waveforms or the use of a rotary transformer.

When the low-frequency characteristic deteriorates, even when a 1-bit pulse is recorded, the pulse duration after reproduction may extend to several bits, thereby causing

intersymbol interference.

The interference characteristic of the scrambled, interleaved NRZI modulation employed by the Digital-S format is equal to 1-D². This means that the input of isolated pulses..00100 results in the output of ...0010 -10, or that intersymbol interference of -1 occurs in 2 bits after the isolated pulses (see Fig. 8-3-1(j)).

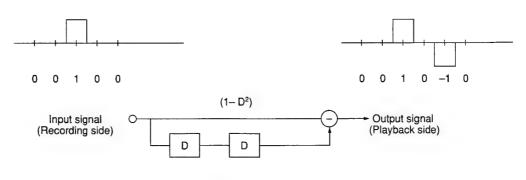


Fig. 8-3-1 (j)

It is by the signal processing on the playback side that the intersymbol interference should be eliminated. This interference characteristic $(1-D^2)$ can be factorized into (1+D)(1-D), where (1-D) can be substituted by the differentiation characteristic during reproduction. On the other hand, (1+D) can be implemented by a 1-bit analog delay and addition operations. Since the reproduced waveform of a scrambled, interleave NRZI signal uses ternary (1, 0, -1), the original binary codes can be obtained by identifying "1" and "-1" in the ternary waveform after (1+D) conversion as "1" and "0" in it as "0" (see Fig. 8-3-1(k)).

FL301 and FL401 on the SS/RFP board, from a 1-bit delay filter, the output of which is added to the original signal. R312 (R412) and VC301 (401) are used to adjust the timing correction

c) PLL

The reproduced signal enters the PLL circuit after the equalizer

The phase comparator compares the frequency and timing of the reproduced signal with those of the clock signal generated by the VCO, and feeds the error voltage back to the VCO. The VCO oscillates the 49.5 MHz clock in synchronization with the reproduced signal, and the clock is supplied to the data latch and DCI-P circuit.

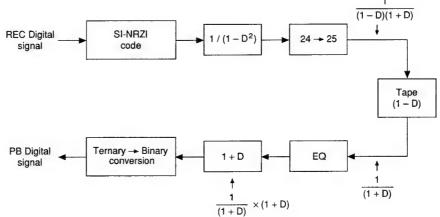


Fig. 8-3-1 (k)

(3) Recording signal delay circuit

(correction for high-speed auto tracking)

The IC231 MAIN board is a PLD IC which has been newly introduced in the DY-90 for the purpose of delaying recording data. Players since BR-D92/52 have been equipped with a high-speed auto tracking facility for a quicker start-up of the servo system than with the conventional auto-tracking system. Since the high-speed auto tracking facility is operated during playback, the DY-90 is not equipped with this facility as it is in principle, a recording unit. However, it is necessary to ensure a more accurate track pattern for properly operating the high speed auto tracking function during recording by controlling the recording position of the ITI signals.

The operating principle of the high-speed auto tracking system is explained below.

In Digital-S, the ITI signals are recorded at both ends and the center of one track. When the tracking centers are in alignment, the ITI output timing (T in the Fig. below) is equal between the leading and trailing ones of the paired heads.

Once the tracking centers are misaligned, the output timing becomes shifted. How much the tracking centers are misaligned is measured based on this timing shift to determine the tracking maximum. This allows reaching of the tracking maximum quicker than with the conventional hill-mounting control facility.

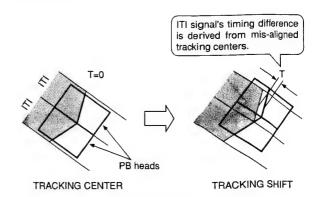


Fig. 8-3-1 (I)

ITI signal's timing difference is derived from mis-aligned tracking centers.

● PR-D92/52 high speed AT operating flow chart

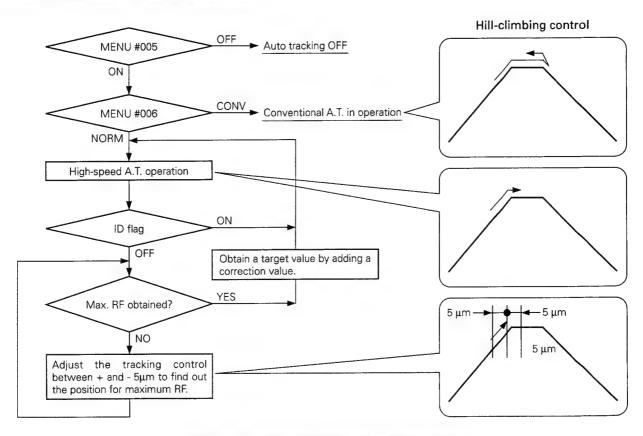


Fig. 8-3-1 (m) high speed AT operating flow chart

In order to correctly operate the high-speed auto tracking function, it is necessary to control the position of the ITI signals to be recorded on the tape. However, since there is a tolerance (T) in the mounting space between the paired recording heads, the actual recording position of the ITI signal on the tape is shifted from the set position.

While the BR-D92/52 has a facility for automatically measuring the tolerance at the head pair, the tolerance information (T) at the head pair is manually set with S201 in the DY-90. The ITI signal can be recorded in the correct position on the tape by delaying the recording timing on one of the heads.

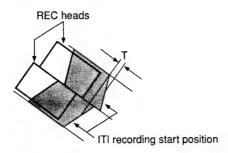
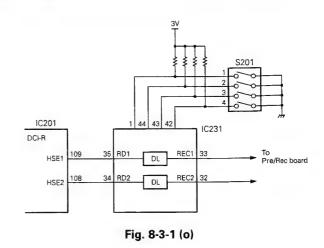


Fig. 8-3-1 (n)

DIP SW201 is connected to pins 1, 42, 43 and 44 of IC231. S201 provides the setting of the mounting error information on the pair of recording heads. Based on this information, IC231 carries out an electrical correction to ensure that the recording of the ITI signal is in a correct position.



8.3.2 Audio Circuit

(1) Analog input system

The signal flow in the analog input system is shown in Fig. 8-3-2 (a) (b)

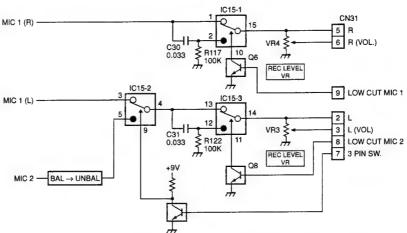


Fig. 8-3-2 (a) MIC input circuit on CP board (PAL model)

Primarily, the analog input system has two lines , MIC1 and MIC2. MIC1 is for a stereo -52 dBs unbalanced input which passes through the MT board into the CP board. MIC2 is for a monaural -60 dBs XLR-3 pin balanced input to be fed to the CP board. At the CP board, the input after undergoing balanced to unbalanced conversion is switched between the MIC1 L and MIC 2 channels by means of the 2C15-22 switch. This can be set by the MIC switch on the DY-90 side panel so that either one of MIC1 or MIC2 can be selected.

For the NTSC version, there are two channels of microphone input, MIC1 and MIC2. MIC1 is for a monaural -52 dB unbalanced input which is passed through the MT board to the CP board. It is then delivered to the Audio board. The REC LEVEL VR of MIC1 is not provided on the CP board but on the Audio board.

VR3 is the REC LEVEL VR for LINE input Audio-1 signal. MIC2 is provided for the monaural -60 dBs, balanced SLR-3-pin input signal which is fed to the CP board. It is delivered to the Audio board after balanced to unbalanced conversion. REC LEVEL VR of MIC2 is a VR4 which is provided on the CP board.

IC15-1 and IC15-3 are low-cut filter ON/OFF switches whose setting can be changed on the service menu. C30, R117, C31

and R122 are low-cut filters. A low-cut frequency of approximately 50 Hz is given by $f = \frac{1}{2\pi CR}$

The MIC signal then enters the AUDIO board, passes through the ALC/limiter circuit, and is then fed to the MAIN board where it is converted to a digital signal.

The line signal entered through the rear panel is directly fed to the AUDIO board and after passing through the MIC (-60 dBs)/LINE (+ 4 dBs) select circuit, likewise passes though the ALC/limiter circuit. See Fig. 8-2-2 (c) for operation of the ALC/limiter as this depends on the AUTO/MANUAL and MIC/LINE input settings.

4.15	AUTO	ALC ON	
MANUAL		ALC/LIMITER OFF	
NE	AUTO	ALC ON	
-enars	MANUAL	LIMITER ON	
	AUTO	ALC ON	
MEKA	MANUAL	LIMITER ON	
	+4dBs -60dBs	+4dBs MANUAL -60dBs AUTO MANUAL AUTO AUTO	

Fig. 8-3-2 (c)

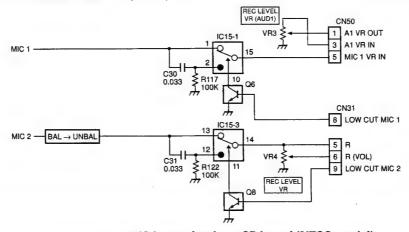


Fig. 8-3-2 (b) MIC input circuit on CP board (NTSC model)

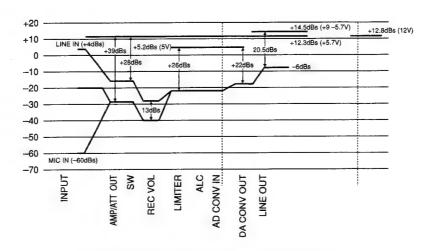


Fig. 8-3-2 (d) Signal levels in different circuits

(2) Limiter/ALC circuit

A significantly broad dynamic range is required for audio recording so that the limiter/ALC unit is definitely necessary when data is gathered from varying situations.

Limiter/ALC operation is accomplished by an electronic control called a VCA (Voltage Controlled Amplifier). The input audio signal is fed to the VCA to feed back the output signal; its signal level is first detected for conversion to a DC signal which then passes through the amplifier for controlling the VCA. (See Fig. 8-3-2 (e)). The difference between the ALC and the limiter is in their trigger levels: the limiter is triggered at the standard input (-60 dBs in case of MIC 2) plus + 19 dB. The ALC is triggered at the standard level and when it receives an audio input higher than the standard level, suppresses its audio level to the standard one. It does not raise the recording level if the input signal level is too low. (See Fig. 8-3-2 (f)).

Referring to the MIC circuit, IC303 and 304 form the VCA. The input signal is admitted through pin 7 and delivered from pin 9. It is then fed to pin 3 of IC309 (IC310) and goes out from pin 1. The VCA-controlled signal is again fed to pin 12 and goes out from pin 14 for level detection and rectification. While rectification is usually done with diodes, transistor rectification takes place here in this circuit. The rectified control voltage exits through the Q317 (Q318) emitter, passes

through the IC309 (IC310) amplifier and is fed to pin 8 of IC303 (IC304) for gain control.

The attack time and recovery time of the limiter/ALC are given below.

Attack time: Approx. 50 - 100 msec Recovery time: Approx. 4 sec.

Attack time refers to the length of time from entry of an excess signal to activation of the limiter/ALC and recovery time is the time taken for it to recover to the initial state.

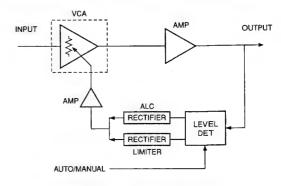


Fig.8-3-2 (e) Limiter/ALC circuit

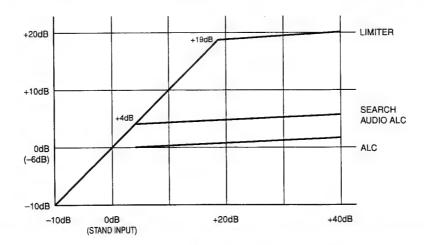


Fig.8-3-2 (f) Limiter/ALC operating characteristics

(3) A/D and D/A converter

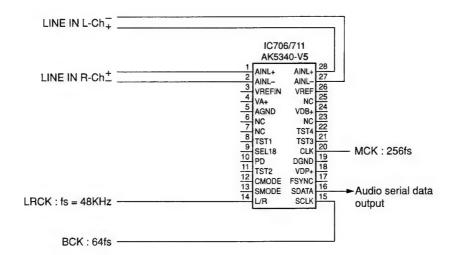
The audio signal after passing through the limiter/ALC enters the MAIN board and is subjected to A/D conversion at a sampling frequency of 48 kHz and a quantification bit number of 16. IC706 is the A/D converter for the LINE signal and IC711 for the MIC signal.

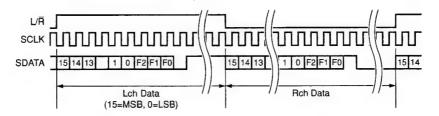
As indicated in Fig. 8-3-2 (e), L-ch. balanced signals are fed to pins 1 and 2 and R-ch balanced signals to pins 27 and 28. BCK (bit clocks) are fed to pin 15 at a frequency of 64 fs (fs = 48 kHz). Over-sampled data is converted to 16 bit data of 48 kHz (fs) by the digital filter in the IC. Over-sampling makes an ideal conversion performance possible regardless of input frequency and input amplitude. Clocks of 256 fs frequency are also supplied as master clocks.

A/D converted digital data is delivered from pin 16 as L/R-ch mixed serial signals. The L/R switching signal is fed to pin 14 so that L-ch data is delivered at "H" and R-ch data at "L" alternately. As serial data, 16-bit data and 3-bit flag bits are delivered sequentially from MSB.

IC712 is a D/A converter. The playback system, having only one D/A converter, is able to play back only 2 channels, so that serial data at the selected two of the four channels is fed to pin 2. As the clocks, LRCK: fs=48 kHz are fed to pin 7, bit clocks (BCK2: 65fs) to pin 3 and master clocks (MCK: 256 fs) to pin 5.

The data over-sampled in the IC is delivered from pin 13 (R-ch and pin 16 (L-ch) as analog output.





Serial data output

Fig. 8-3-2 (g) A/D converter

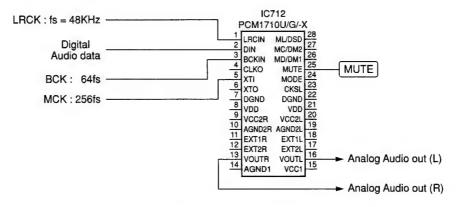


Fig. 8-3-2 (h) D/A converter

8.3.3. System Control & Servo System Circuit

(1) System Control

IC601 is an 8 bit microprocessor for controlling the VTR section. It serves to control the VTR's mechanical parts and servo systems. The functions of its terminals are given below.

IC602 is an IC for expansion which mainly converts the information from the mechanical parts to bus data for communication with IC601, IC603 is an EP ROM, while IC601 is an IC for address data latching.

No.		
2 OUT EEP1 CLOCK EEPROM clock 3 IN NTSC/PAL NTSC/PAL conversion 4 IN PFP1 5 IN PFP0 6 IN TRP2 Tracking pulse 2 7 IN TRP1 Tracking pulse 1 8 IN TRP0 Tracking pulse 0 9 IN POWER IN S/S "H" with POWER ON		
3 IN NTSC/PAL NTSC/PAL conversion 4 IN PFP1 5 IN PFP0 6 IN TRP2 Tracking pulse 2 7 IN TRP1 Tracking pulse 1 8 IN TRP0 Tracking pulse 0 9 IN POWER IN S/S "H" with POWER ON		
4 IN PFP1 5 IN PFP0 6 IN TRP2 Tracking pulse 2 7 IN TRP1 Tracking pulse 1 8 IN TRP0 Tracking pulse 0 9 IN POWER IN S/S "H" with POWER ON		
5 IN PFP0 6 IN TRP2 Tracking pulse 2 7 IN TRP1 Tracking pulse 1 8 IN TRP0 Tracking pulse 0 9 IN POWER IN S/S "H" with POWER ON		
6 IN TRP2 Tracking pulse 2 7 IN TRP1 Tracking pulse 1 8 IN TRP0 Tracking pulse 0 9 IN POWER IN S/S "H" with POWER ON		
7 IN TRP1 Tracking pulse 1 8 IN TRP0 Tracking pulse 0 9 IN POWER IN S/S "H" with POWER ON		
8 IN TRP0 Tracking pulse 0 9 IN POWER IN S/S "H" with POWER ON		
9 IN POWER IN S/S "H" with POWER ON		
11 BUS WR		
12 BUS RD WR/RD control		
13 OUT FULL ERASE "H" in full-erase mode		
14 OUT REEL BRAKE Reel brake control		
15 OUT REEL M BRAKE Reel main brake control		
16 BUS ASTB Latch enable output		
17 — VSS GND		
18 BUS A15		
19 BUS A14		
20 BUS A13		
21 BUS A12		
22 BUS A11 Address bus		
23 BUS A10		
24 BUS A9		
25 BUS A8		
26 BUS A7/D7		
27 BUS A6/D6		
28 BUS A5/D5		
29 BUS A4/D4		
30 BUS A3/D3 Data bus		
31 BUS A2/D2		
32 BUS A1/D1		
33 BUS A0/D0		
34 OUT DRUM PWM Drum PWM output		
35 OUT CAP PWM Capstan PWM output		
36 IN VDD Power +5V		
37 — MODE Not used (+5V)		
38 OUT (P86) Not used		
l oo VTo Not used		
39 — XT2	GND	
40 — VSS GND		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock)		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock) 42 IN X1		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock) 42 IN X1 Reset signal input		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock) 42 IN X1 Reset signal input 43 IN PST Reset signal input 44 OUT M. MOTOR + Mode motor control (FWD)		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock) 42 IN X1 Reset signal input 43 IN PST Reset signal input 44 OUT M. MOTOR + Mode motor control (FWD) 45 OUT M. MOTOR - Mode motor control (REV)		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock) 42 IN X1 Reset signal input 43 IN PST Reset signal input 44 OUT M. MOTOR + Mode motor control (FWD) 45 OUT M. MOTOR - Mode motor control (REV) 46 OUT CFG-A PWM PWM output (for CAP FG A BIAS) FG DUTY A		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock) 42 IN X1 Reset signal input 43 IN PST Reset signal input 44 OUT M. MOTOR + Mode motor control (FWD) 45 OUT M. MOTOR - Mode motor control (REV) 46 OUT CFG-A PWM PWM output (for CAP FG A BIAS) FG DUTY A 47 OUT CFG-B PWM PWM output (for CAP FG A BIAS) FG DUTY A		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock) 42 IN X1 Reset signal input 43 IN PST Reset signal input 44 OUT M. MOTOR + Mode motor control (FWD) 45 OUT M. MOTOR - Mode motor control (REV) 46 OUT CFG-A PWM PWM output (for CAP FG A BIAS) FG DUTY A 47 OUT CFG-B PWM PWM output (for CAP FG A BIAS) FG DUTY A 48 OUT REEL PWM Reel motor PWM output		
40 — VSS GND 41 IN X2 Crystal 12 MHz (main clock) 42 IN X1 Reset signal input 43 IN PST Reset signal input 44 OUT M. MOTOR + Mode motor control (FWD) 45 OUT M. MOTOR - Mode motor control (REV) 46 OUT CFG-A PWM PWM output (for CAP FG A BIAS) FG DUTY A 47 OUT CFG-B PWM PWM output (for CAP FG A BIAS) FG DUTY A	UTO ADJ	

PIN No.	in/out	NAME	DESCRIPTION	
51	OUT	REC CTL-	REC CTL pulse output (-)	
52	OUT	HID P/DFF	HID pulse output	
53	IN	TEST MODE	Warning cancel (S601)	
54	OUT	OPE-L LATCH	Operation LED latch	
55	OUT	REC CTL +	REC CTL pulse output (+)	
56	IN	DPG/SPA P	Drum PG/SPA signal input	
57	IN	OPE COVER SW	Operation cover SW input	
58	OUT	OPE-L DATA	Operation LED data	
59	OUT	OPE-L CLK	Operation LED clock	
60	IN	NMI	N-4 d	
61	IN	_	Not used	
62	IN	SP REEL FG	D150 : (0.11 20.11-)	
63	IN	TU REEL FG	Reel FG input (8 Hz -28 Hz)	
64	IN	CAP X2 FG	Capstan x 2 FG Input (NTSC: 3740 Hz, PAL: 3728 Hz, REC mode)	
65	IN	DRUM FG	Drum FG input (2100 Hz)	
66	IN	PB CTL	PB TL pulse input (NTSC): 30 Hz, PAL: 25 Hz, PLAY mode)	
67	IN	TSR/REF FLD	TSR input	
68	IN	BATT REMAIN	Battery remaining detection (A/D CONV IN)	
69	IN	KEY A	Operation key scan input (STOP, REW, FF, PLAY, EJECT)	
70	_	(ANI2)		
71	_	(ANI3)	Not used	
72		(ANI4)		
73	IN	DEW	DEW sensor input	
74	IN	CAP FG A	Capstan FG A input (NTSC: 1870 Hz, PAL: 1864 Hz, REC mode)	
75	IN	TAPE LED	Tape LED detection (normally 1V DC)	
76	IN	END SENS	End sensor detection ("H" when detecting)	
77	IN	BEGIN SENS	Begin sensor detection ("H" when detecting)	
78	IN	BATT REM	Battery data input (for Anton Bauer battery)	
79	IN	RF ENV1	RF signal input (leading head)	
80	IN	RF ENV2	RF signal input (lagging head)	
81	_		Not used	
82	IN	DC12 IN	DC 12V IN (XLR 4P) detecting ("L" when detecting)	
83		AVDD	Power supply for A/D converter	
84		AVREF	Reference power for A/D converter	
85		AVSS	GND	
86			Not used	
87	IN	CAP FG-B	Capstan FG B input (NTSC: 1870 Hz, PAL: 1864 Hz)	
88	IN	FPS	Reference signal input (NTSC:15 Hz, PAL: 12.5 Hz)	
89	IN/OUT	JB CLK	Clock for A/V microprocessor communications	
90	IN	VDD	+ 5V	
91	OUT	JB DATA OUT	Data for A/V microprocessor communications	
92	IN	JB DATA IN		
93	OUT	POWER ON SW-REG	Servo switching regulator ON	
94	OUT	(P06)	TAPE LED drive	
95	OUT	CTL SW1	PB. CTL GAIN SW	
96	OUT	REEL FWD	Reel direction (FWD: "H")	
97	OUT	CAP FWD CTL	Capstan direction (FWD: "H")	
98	OUT	TAPE REV	Tape direction (REV: "H")	
99	OUT	SPA SEL	Drum PG/SPA switching signal	
100	OUT	SERVO REC	"L" when servo REC	

Table 8-3-3

(2) Recording Start-Stop operation

The timing signal during the editing point recording is different between TC Preset REC RUN mode and REGEN mode.

In REC RUN mode, a zero-frame edit pulse is recorded at the end of recording same as with GY-Y2/BR-S422. This is accomplished by changing the duty ratio of a CTL signal to mark an edit point. The T/C generator in REC mode then stops to advance two frames after the marking.

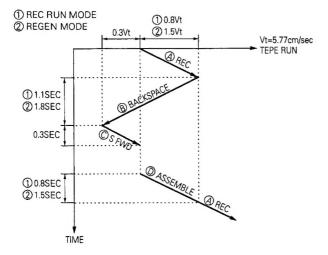
During the editing point recording, the zero-frame edit pulse is detected during assembly playback, whereupon recording and T/C data advancement starts two frames after the detected edit pulse. This enables you to do editing just at zero frame.

In case of REGEN mode, the record end point is stored in memory in the form of time code data. Editing point recording at zero frame is made possible by gen-locking the time code generator at PB time code data during assembly playback.

1) STANDARD SPECIFICATION

T/C GEN MODE	AEF SETUP TIME	EDITING ACCURACY	REFERENCE TIMING
① REC RUN MODE	0.8 SEC WITHIN	±0 FRAME	ZERO FLAME EDITING PULSE
② REGEN MODE	1.5 SEC WITHIN	±0 FRAME	TIME CODE DATA

2) BACKSPACE OPERATION



	(A)	B	0	0
T/C GEN	RUN	STOP	STOP	① STOP ② REGEN
SERVO	REC	SEARCH	PB	REC-PLAY
VIDEO	REC	CUE REVIEW	E-E	① E-E ② PB
AUDIO	REC	SEARCH	E-E	① E-E ② PB
TAPE DRIVE	FWD	REV(X2)	FWD	FWD
MECHA POSITION	FWD	FWD	FWD	FWD

Fig. 8-3-3 (a)

(3) Servo System

The block diagram of the drum, capstan and reel servo circuit is shown in Fig. 8-3-3(a). Each motor control unit consists of an MDA section and a switching regulator section. Q901to Q909 are switching regulators and IC901 is an IC for switching.

First referring to the reel system, the phase/speed control signal is delivered from pin 48 of IC601 as a PWM signal. It passes through the LPF and is fed to pin 6 of IC809 as a reel error signal. IC809 serves as an MDA IC for the reel which controls rpm with reel error voltage. It also includes a supply power control circuit, with its pin 3 for the voltage to be supplied to the motor (VM) and its pin 4 for the signal for controlling the supply voltage (VS).

Most of the power consumed by the IC's themselves is lost between the collectors and emitters of the output stage transistors. In the case of reel servo Q809 to Q811, the loss becomes higher as the voltage between C and E increases with a greater output current.

The voltage given by subtracting a voltage applied to the motor from the supply voltage is such a voltage between C and E. The lower the current, the lower is the voltage applied to the motor so that a greater voltage will be applied across C and E. Thus, in order to ensure an efficient use of power, it is necessary to vary the supply voltage (VM) depending on the output current, that is, the supply voltage should be suppressed for a low current output and increased for a higher current output. It is important to avoid applying an excess voltage to the section between C and E of the output stage transistors.

The power control facility (VS) pin 4 has been provided for this purpose. The power control signal (VS) is passed through the operator amplifier (IC902) and is fed to the switching IC (pin 17 and 18 of IC901. Based on this control signal, the power control signal (VS) is passed through the operation amplifier (IC902) and is fed to the switching IC (pin 17 and 18 of IC901). Based on this control information, the switching signal from pin 15 is supplied in the switching regulators Q901 to Q903, so as to supply the reel motor with power.

Likewise, for the drum servo, the phase/speed control signal is delivered from pin 34 of IC601 as a PWM signal. It passes through the LPF and is delivered from pin 5 of CN53 to the MDA board as a drum error signal to control the drum rotation. The power control signal (VS) is entered through pin 6 of CN53 and is fed to pins 5, 6 of the switching IC901. The switching signal from pin 8 is then supplied in the switching regulators Q907 to Q909 so as to control the motor power supply. The motor power (VM) is delivered through pin 7 of CN53 to the MDA board.

In the case of controlling the capstan motor, the phase/speed control signal is delivered from pin 35 of IC601 as a PWM signal and passes through the LPF to provide a capstan error voltage. In the case of the capstan servo, there is no VS signal from the MDA so that the capstan signal is fed to pins 12, 13 of IC901 as VS.

The switching signal from pin 10 controls the Q904 to Q906 switching regulators. The capstan VM power is delivered through pin 3 or CN50 to the capstan motor for directly controlling the motor.

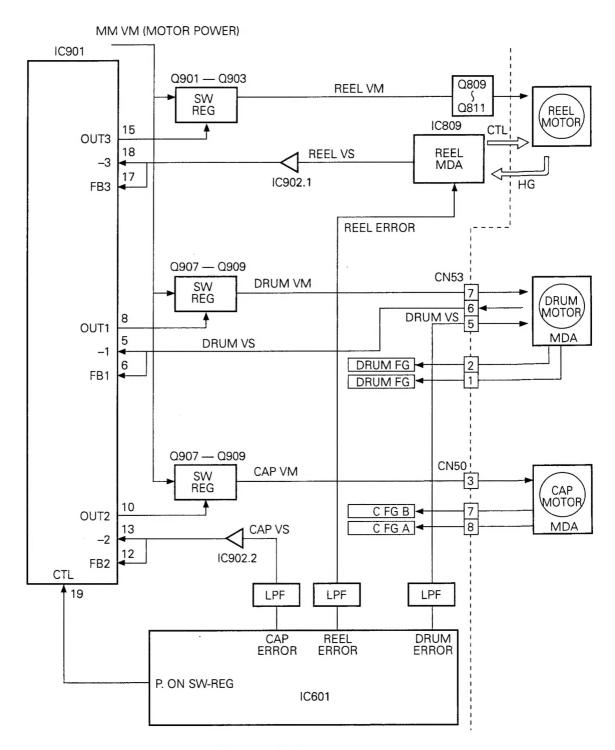


Fig. 8-3-3 (b) Servo circuit.

8.4 DY-90 Function Comparison List Classified by Destination

Some of the accessories functions and specifications for DY-90 differ depending on destination (country). Please refer to the list below for the details.

MODELNAME	DY-90E	DY-90 Japan domestic version	DY-90U	DY-90E (X) for China version	DY-90EC for China version	DY-90EC (K) for China version (Semi-knockdown)
BATTERY HOLDER	Anton-Bauer	BH-P27 type	BH-P27 type	BH-P27 type	BH-P27 type	BH-P27 type
COLOR FILTER	1:3200K 2:5600K+ 1/4ND 3:5600K 4:5600K+ 1/16ND	1:3200K 2:5600K+ 1/4ND 3:5600K 4:5600K+ 1/16ND	1:3200K 2:5600K 3:5600K+ 1/16ND 4:EFFECT (cross)	1:3200K 2:5600K+ 1/4ND 3:5600K 4:5600K+ 1/16ND	1:3200K 2:5600K+ 1/4ND 3:5600K 4:5600K+ 1/16ND	1:3200K 2:5600K+ 14ND 3:5600K 4:5600K+ 1/16ND
	Select by Menu	Select by Menu	4ch fixed	Select by Menu	Select by Menu	Select by Menu
4CH AUDIO SYSTEM	Stereo MIC REC available	Stereo MIC REC available	DA1 : AUD1 DA2 : MIC2 DA3 : AUD2 DA4 : MIC1	Stereo MIC REC available	Stereo MIC REC available	Stereo MIC REC available
			Stereo MIC REC not available			
Accessory List & packing	Mini MIC Tripod base Set up box	Mini MIC Tripod base Set up box	Mini MIC Tripod base Set up box	Mini MIC Tripod base Set up box	Mini MIC Tripod base Set up box MIC holder (KA-A90U) Shoulder strap	Mini MIC Tripod base Set up box MIC holder (KA-A90U) Shoulder strap VF-P116E MV-P615U
	Double carton (Refer to page 7-1)	Double carton (Refer to page 7-1)	Double carton (Refer to page 7-1)	Double carton (Refer to page 7-1)	With CB-P90U (Refer to page 17-2)	With CB-P90U (Refer to page 7-2)
Special setting (electrical)	None	None	None	Gamma: MAX Master black: +4 Color Matrix: different	Gamma: MAX Master black: +4 Color Matrix: different	Gamma: MAX Master black: +4 Color Matrix: different
CPboardS1-8 (DIP SW)	ON	OFF	ON	OFF	OFF	OFF

8.5 COMPATIBILITY CHART (for SERVICE)

(1) DY-90E Circuit Board Assembly Version Chart

Some early production models of DY-90E have circuit board assembly which are incompatible.

And software ROM version had been changed some times, too. So in this section, there are compatibility chart for board assembly and software version.

Please use following as a reference when servicing the applicable models.

DY-90E Board Assembly Version Chart Diagram

Serial NO. Board name	XXXX0021 and after	XXXX0271 and after		
MAIN board	SCK2534-E0A	SCK2534-E0B, E1A		
CP board	SCK2526-00A	SCK2326-P0B		
IC3 on CP board (ROM ver.)	V1-00, V1-01	V1-02		
IC4 on CP board (ROM ver.)	V1-00 V1-0	11, -02, -03, -04, -05, -06, -07		

There is compatibility between these circuit boards.

Fig. 8-4-2

NOTE:

- SCK25XX-XXX means, board assembly part number. (parts are mounted)
- IC3 (ROM) on CP board have software program for IC309 and IC310 (PLD IC) on MAIN board.
- IC4 (ROM) on CP board have software program for Camera control
- Serial number of this chart should be used only reference.
- The set which was product XXXX0271 and after, added some electrical adjustment ITEM for camera process. So please refer to Section 3. 3. 3. -7 Black adjustment 2 part.